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JULY, 1947

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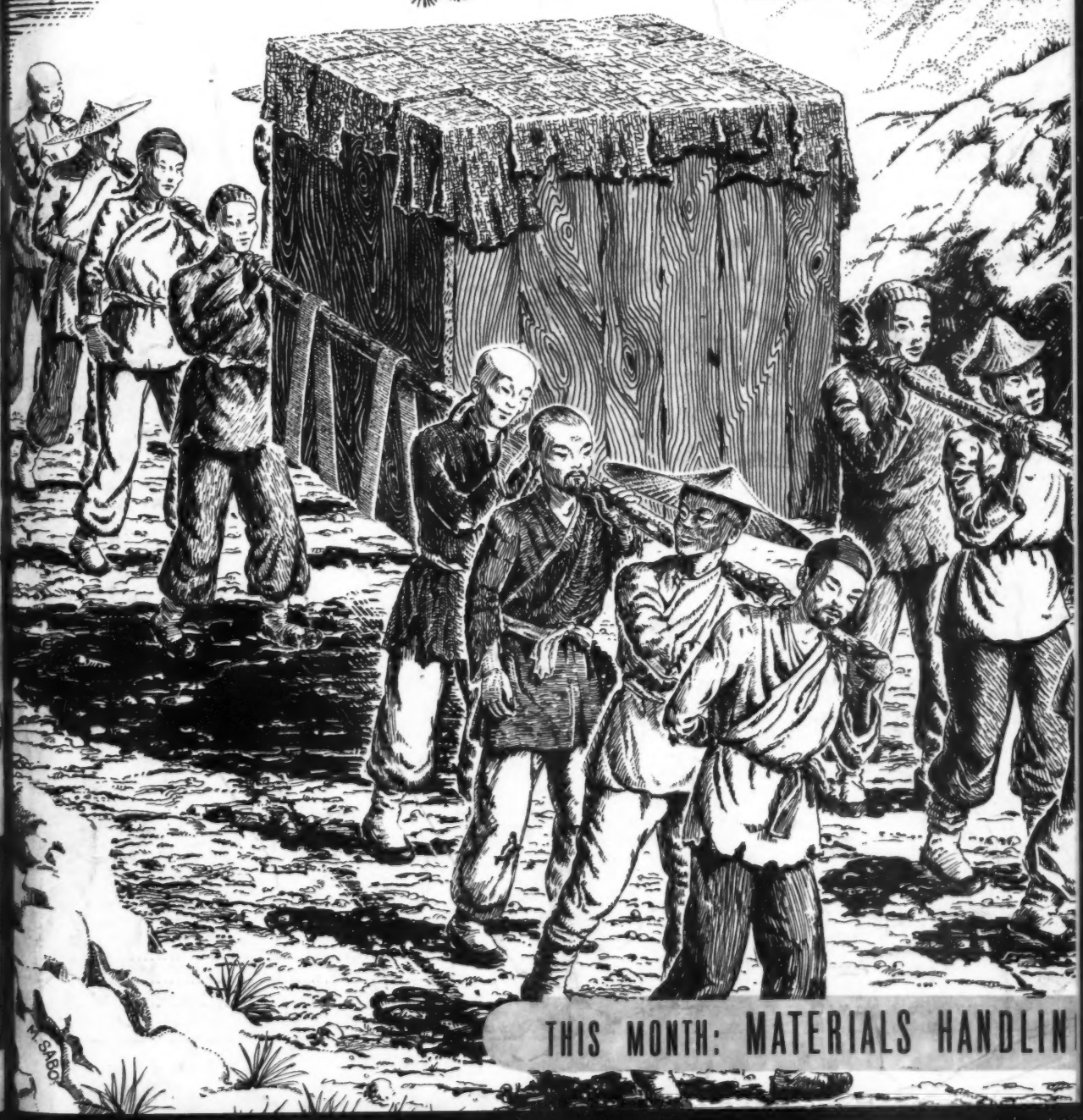

THIS MONTH: MATERIALS HANDLIN

Skylift Wins on "Point Test!"

COMPARISON PROVES

Feature for feature Skylift Outpoints All Other Fork Trucks

1 The only hydraulic electric truck with automotive type controls:
Operates like a car—anyone who has driven an automobile, can operate the Skylift!

2 Single operating handle for lift and tilt control:
Simplicity of control. Lever, just below steering wheel similar to gearshift lever on newer model cars. Speeds operation—reduces operator fatigue.

3 Can lift, tilt and drive simultaneously or independently under all load conditions:
Speeds operation. Provides easier and faster spotting of loads since lifting and tilting can be accomplished while Skylift is in motion.

4 Forks elevate full height of first lift without increasing overall height:
Forks and uprights move independently to give you full 67 inch single lift before increasing upright height beyond standard 83 inches. Stack to ceiling height in low clearance buildings and boxcars without uprights extending above load.

5 Automatically controlled pre-set lowering speed:
Eliminates possibility of damage to load caused by excessive lowering speeds. No danger of load dropping violently.

6 130" lift with 83" collapsed height of uprights:
Highest lift on any fork truck with standard 83" overall collapsed height of uprights. Higher storage possible, still truck will pass through standard 7 foot high door.

7 Dual chains are load equalized and fully compensated:
Safety—longer chain life. 2 separate chains are used instead of double width chain. Each chain has sufficient capacity to hold load.

8 Fork carriage equipped with special design thrust rollers:
Prevents upright spreading. Also if off center loads are handled, fork carriage will not twist.

9 Reversible drive wheels:
Off center mounting provides increased overall width dimension when drive wheels are reversed ... greater stability on rough or uneven runways.

10 All wheels demountable without disrupting wheel bearing adjustment:
When wheels are removed for tire replacement, bearing alignment cannot be disturbed.

11 Full magnetic contactor control:
Foolproof operation—Truck is either in speed or out of speed. No burning or arcing in controller. Increases life of electrical equipment.

12 Automatically timed master controller (NEWmatic):
Provides automatically timed sequence of four speeds in forward and reverse directions. Completely eliminates tendency of truck operator to start in higher speed, since NEWmatic controller allows truck to start *only* in first speed and pass through faster speeds *only* in proper sequence. Smooth starting, reversing, or accelerating eliminates tire slippage. Reduces peak electric current surges by two-thirds.

13 Foot accelerator pedal for speed control:
Automotive type control—speeds up operation. Simplicity.

14 Disc type brake:
Smoother, easier, positive stopping. Equalized braking power under all operating conditions. Self-aligning for long life.

15 Automatic tilt stops in backward, vertical and forward positions:
Safety. Uprights always centered at vertical position when moving either backward or forward. Reduces possibility of load spilling.

16 Silicone Varnish for motor insulation:
Virtually eliminates possibility of damage to motors from overheating. Applied over glass, mica, or asbestos, it is thus the most effective insulation known to electrical engineers.

Plus These All-Star Features

Dead-man control • Caster-type steering axle • Center control • Operator's position accessible from both sides • Low center of gravity.

NO OTHER FORK TRUCK HAS THESE 16 EXCLUSIVE FEATURES

Skylift
ELECTRIC TRUCK
A PRODUCT OF AUTOMATIC
Lightens LIFE'S LOADS

ONLY AUTOMATIC MAKES THE FAMOUS SKYLIFT ELECTRIC TRUCKS, TRANSPORTERS AND TRANSTACKERS

Send Coupon for "POINT-TEST" Proof of Material Handling Savings

AUTOMATIC TRANSPORTATION COMPANY
DIV. OF THE YALE & TOWNE MFG. CO.
115 W. 87th St., Dept. K-7, Chicago 20, Ill.

☐ Please send me "POINT-TEST" Proof of Skylift material handling superiorities.
☐ Have an ATCO Specialist make a free survey of my material handling costs.
☐ Schedule me for a showing of ATCO's new film, "Pay Loads Pay Off."

Company Name.....
By.....
Street Address.....
City..... State.....

BAKER TRUCKS cut Pulp-Handling Costs at Nekoosa-Edwards Paper Mills

How Baker Lift Trucks and skids can cut costs of handling heavy, bulky material is demonstrated in the two mills of The Nekoosa-Edwards Paper Company at Nekoosa and Port Edwards, Wis. Pictures and captions tell the story.

Incoming materials such as bagged starch are unloaded with Baker Low-Lift Trucks. Bags are placed on skids in the cars, and skid loads carried to beaters on the trucks. Surplus stock is stored on skids.

At the deckers, wet laps of pulp are folded and piled on skid platforms. Truck keeps deckers supplied with empties and picks up loaded skids, transporting them to scales for weighing, and then to temporary storage.

Wet laps remain on skids in temporary storage until delivery to beaters. About 1850 standard 36" x 60" metal platform skids are in use in both mills. Unit loads average about 3600 lbs. wet weight.

Three deckers normally operating continuously in the two mills produce about 365 skid loads or 650 tons per day. When temporary storage cannot accomodate stock on skids, Hy-Lift Trucks do the heavy lifting for high piling — the wet pulp being too soft for tiering on skids.

Wet-lap pulp on skids is interchanged between the two mills — four miles apart — by the company's own railroad. Box cars accomodate 20 skid-loads per trip. Loading and unloading is completely mechanized by Lift Trucks available at both mills.

Truck operators are held responsible for keeping the 26 beaters at both mills supplied with skid loads of wet-lap pulp from temporary stock piles—also for removing empties, returning them to deckers, and removing pulp from deckers to keep production moving.

Baker Trucks at Nekoosa-Edwards are up to 18 years old — and still going strong!

If your problem is handling heavy, bulky materials, a Baker Material Handling Engineer can show you how to cut costs.

BAKER INDUSTRIAL TRUCK DIVISION *of The Baker-Raulang Company*
2176 West 25th Street + + + Cleveland, Ohio

2800-2-47

Baker INDUSTRIAL TRUCKS

Skylift Wins on "Point Test!"

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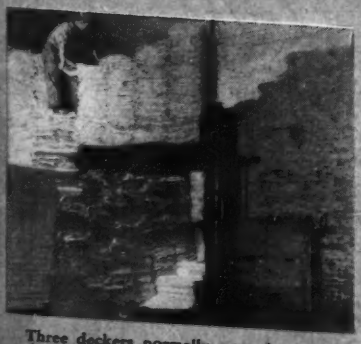

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2176 West 25th Street + + + Cleveland, Ohio

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Baker INDUSTRIAL TRUCKS

Low maintenance expense helps to reduce your operating cost per mile

Gerstenslager Custom-built Bodies are a strong ally these days in the truck operator's running battle with high operating costs.

In addition to high class design and appearance Gerstenslager Bodies have the high quality construction that keeps maintenance expense at a minimum.

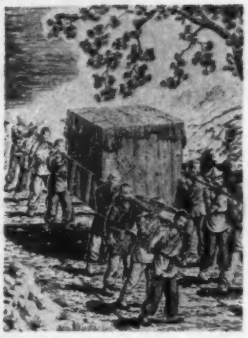
This advantage has given Gerstenslager Bodies coast-to-coast recognition in the past—and it is more important than ever today when overall operating costs have become one of the most pressing problems of the highway transportation industry.

THE GERSTENSLAGER COMPANY, WOOSTER, OHIO

Established 1860

GERSTENSLAGER

custom-built **Van Bodies**



DISTRIBUTION AGE

The Magazine That Integrates All Phases Of Distribution

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THIS MONTH'S COVER

Emphasizes the world-wide aspects of MATERIALS HANDLING

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Vice President and General Manager

D. J. WITHERSPOON
Editor

GEORGE POST
Assistant Manager

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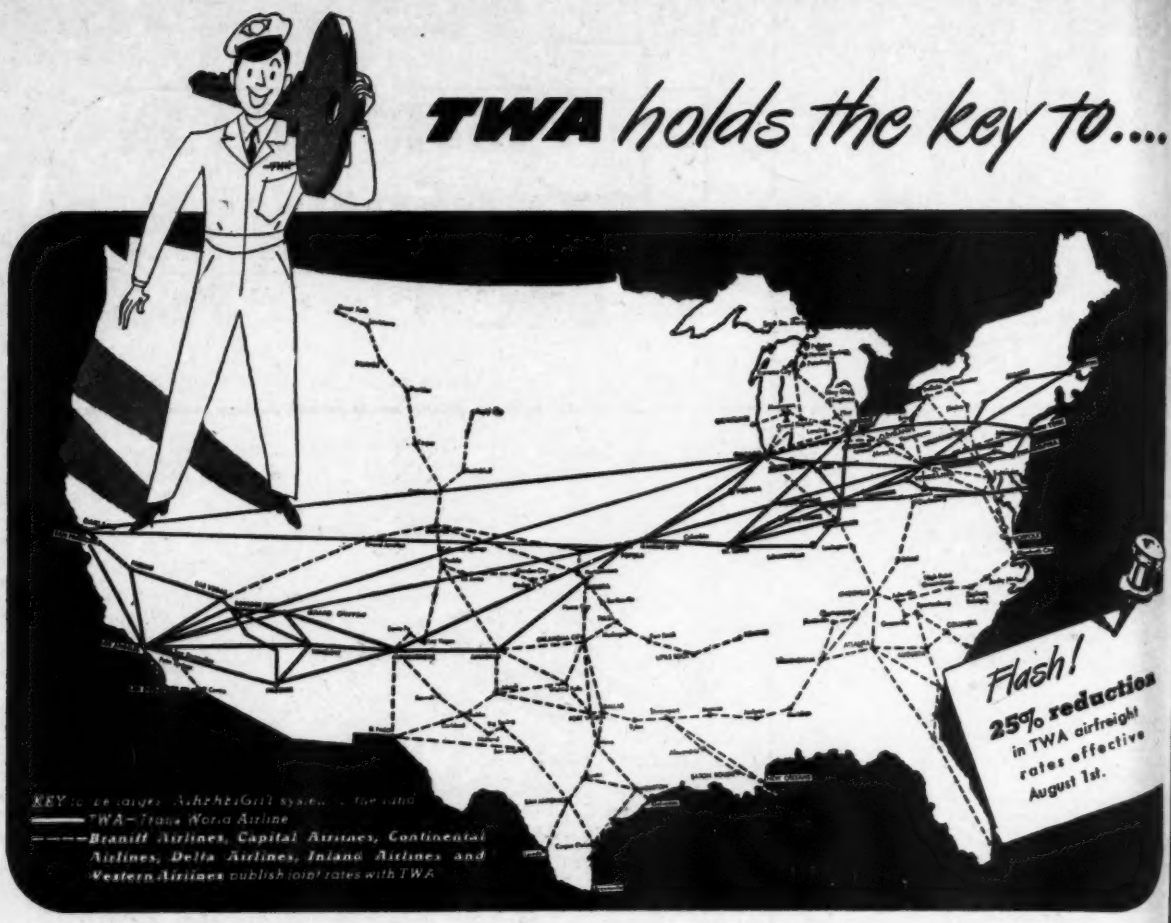
STATEMENT OF POLICY . . . Our policy is based on the premise that distribution embraces all activities incident to the movement of goods in commerce. If distribution is to be made more efficient and economical, we believe business management must consider more than sales, because more than sales are involved. Marketing, while vital, is one phase only of distribution; seven other practical activities not only are necessary but condition marketing costs. Most commodities require handling, packing, transportation, warehousing, financing, insurance, and service and maintenance of one kind or another before, during or after marketing. We regard all of those activities as essential parts of distribution. Hence, the policy of DISTRIBUTION AGE is to give its readers sound ideas and factual information on methods and practices that will help them to improve and simplify their operations and to standardize and reduce their costs in all phases of distribution.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Serving Almost Every Major Industrial Area!

The TWA Airfreight Tariff publishes through-rates with six other U. S. Airlines. That's how your shipment, consigned to TWA, can fly — on one tariff and at one rate — to any destination on the above map.

This is the greatest common-carrier airfreight system — the greatest airfreight coverage — ever offered anywhere.

And Here's What Happens, If You Call The Nearest TWA Airfreight Office:

A courteous, well-trained attendant will answer your call. Arrangements made, your shipment will proceed to the airport, where capable crews, using the best equipment, will carefully expedite it to destination.

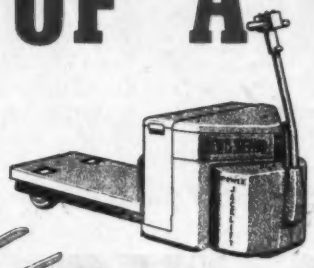
Since all TWA flights carry airfreight, and flights between major industrial areas operate on a high-frequency schedule, your shipments will be in your customers' hands when shipments of competitive products are only beginning their earth-bound journey.

TWA AIR·FREIGHT

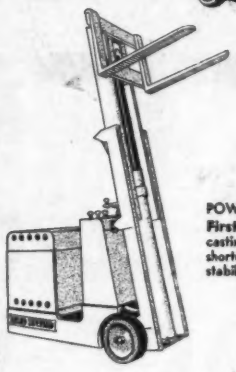
All TWA Flights Also Carry Air Mail

TWA's the way to Ship—For Airfreight Flies on Every Trip

SIGN OF A GREAT LINE



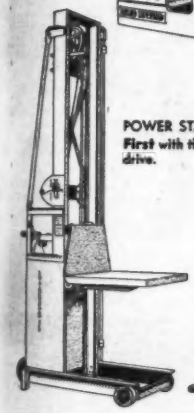
POWER JACKLIFTS
First complete electric operation with handle vertical. **First** in so many ways — you should see it — **First!**



POWER FORK TRUCKS
First with one-piece main frame casting, lowest center of gravity, shortest turning radius, maximum stability, lowest maintenance.

Lewis-Shepard Engineers have been producing "FIRSTS" for over 32 years. Always pioneering, always field-testing, — each new design has been an outstanding improvement over those on the market. This unique "Multiply Manpower" Trade Mark (It's a pushover with L-S) is recognized throughout industry as the symbol of the most diversified line of materials handling equipment you can buy.

Write today and be sure to **see L-S FIRST!**

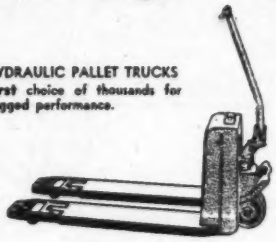


POWER STACKERS
First with the famous L-S worm drive.

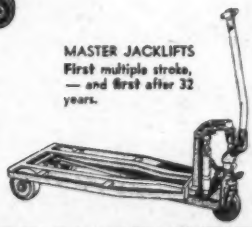
HYDRAULIC FOOTLIFT TRUCKS
Another engineering **First** by Lewis-Shepard.

STORAGE RACKS
Another L-S **First**, — arc-welded.

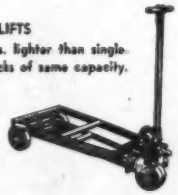
SKID PLATFORMS
First arc-welded, steel-bound skid.



HYDRAULIC PALLET TRUCKS
First choice of thousands for rugged performance.



MASTER JACKLIFTS
First multiple stroke, — and **first** after 32 years.



SPEEDLIFTS
100 lbs. lighter than single lift trucks of same capacity.

FLOORMASTERS
Popular **First**, — with arc-welded frame and precision balance.

LEWIS-SHEPARD PRODUCTS, INC. 321 WALNUT STREET WATERTOWN 72, MASS.

REPRESENTATIVES IN PRINCIPAL CITIES CONSULT YOUR PHONE DIRECTORY

Now! LIFE INSURANCE EXPERTS PROVE THAT FORD TRUCKS LAST *up to* 19.6% LONGER

FOR THE first time in history, the scientific methods used by life insurance companies in computing rates have been put to work in figuring out life-expectancy tables for Ford Trucks.

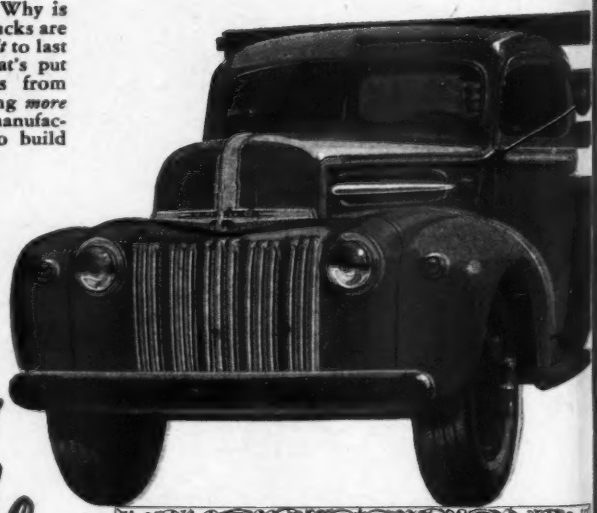
4,967,000 Trucks Studied . . .

Wolfe, Corcoran and Linder, leading New York life insurance actuaries, assembled the records of all trucks of the five sales leaders registered from 1933 through 1941 . . . 4,967,000 trucks in all. Then they prepared *truck* life-expectancy tables in exactly the same way that they prepare *human* life-expectancy tables for life insurance companies.

Ford Trucks On Top!

The result? Ford Trucks Last Longer! Up to 19.6% longer than the other 4 sales leaders! Why is this true? Because Ford Trucks are *built* stronger. They're *built* to last longer! That extra life that's put into Ford Trucks comes from Ford experience in building *more* trucks than any other manufacturer. Ford knows *how* to build trucks that last longer!

See your Ford Dealer today. See the life-expectancy charts. You'll see why it'll pay you to place your order for a Ford . . . the truck that lasts longer!



What Longer Truck Life Means to You . . .

Why It Pays to Wait for a New Ford Truck!

It stands to reason the longer you use a truck, the less it costs to own. That's why longer-lived Ford Trucks are the top truck value. And, logically, Ford longevity means lower maintenance costs . . . less time in the shop. It means more unused miles when you're ready to trade, and a better trade-in. Yes, any way you look at it, you'll get more truck for your money with a Ford Truck . . . because Ford Trucks last longer!

Certified Proof

FORD TRUCKS LAST LONGER!

The life expectancy of a Ford Truck is:

13.1% longer than that of Truck "B"
3.2% longer than that of Truck "C"
7.6% longer than that of Truck "D"
19.6% longer than that of Truck "E"

OFFICIAL ACTUARIAL CERTIFICATE

Based on the application of sound and accepted actuarial methods to the actual experience as measured by truck registrations, we hereby certify that, in our opinion, the accompanying table fairly presents the relative life-expectancy of the trucks involved.

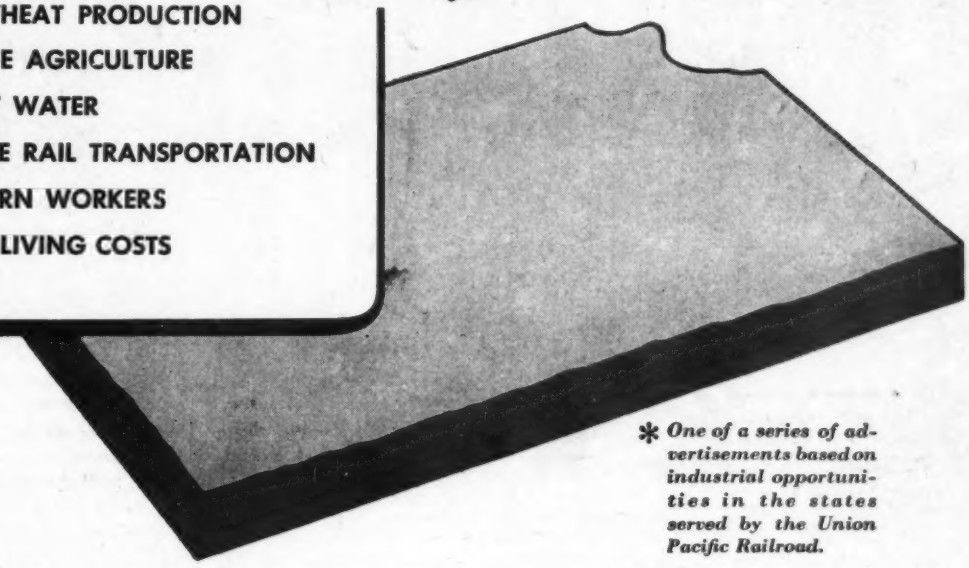
WOLFE, CORCORAN AND LINDER
Life Insurance Actuaries, New York, N. Y.

UNION PACIFIC

TREASURE MAP OF INDUSTRY

RICH NATURAL RESOURCES
CENTER OF NATIONWIDE MARKET
PROGRESSIVE INDUSTRY
FIRST IN WHEAT PRODUCTION
PRODUCTIVE AGRICULTURE
ABUNDANT WATER
DEPENDABLE RAIL TRANSPORTATION
NATIVE BORN WORKERS
MODERATE LIVING COSTS

Kansas *



* *One of a series of advertisements based on industrial opportunities in the states served by the Union Pacific Railroad.*

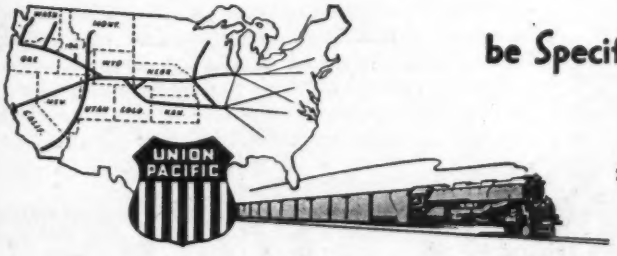
KANSAS—almost in the exact geographical center of the United States; an important factor to industries serving nationwide markets.

Agriculture is king. Kansas normally ranks first in wheat production. In addition to grains, vegetables and fruits, a large part of farm income is derived from livestock and poultry.

Kansas industry keeps step with agriculture. There are approximately 2,500 manufacturing and processing establishments. Over four million tons of coal are mined annually. Here is the largest natural gas field in the world. Eighteen principal rivers with two great watersheds provide an abundance of water. The population is 97 per cent native born.

★ ★ ★

Kansas . . . the hub of a rich market; a treasure chest of natural resources with dependable labor; outstanding public health record; moderate living costs; and excellent transportation over Union Pacific rails.



be Specific – say

"Union Pacific"

* *Address Industrial Department, Union Pacific Railroad, Omaha 2, Nebraska, for information regarding industrial sites.*

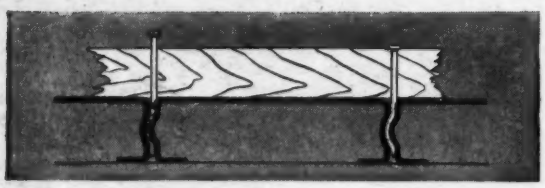
UNION PACIFIC RAILROAD

THE STRATEGIC MIDDLE ROUTE

You Save 3 Ways

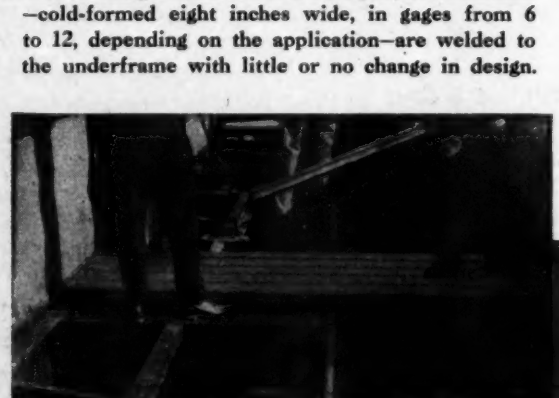
WITH ALL-PURPOSE

NAILABLE STEEL



STRONGER NAIL GRIP — TIGHTER SURFACE! This cross-section of Nailable Steel Flooring shows how the curved channel flanges grip ordinary nails with a holding force four times that of wood. A special stiff plastic material in the nailing grooves seals itself when the nails are withdrawn. The floor *stays* tight—suitable for all types of lading!

EASY INSTALLATION! Nailable Steel Flooring is here being installed in a DT&I gondola. Channels —cold-formed eight inches wide, in gages from 6 to 12, depending on the application—are welded to the underframe with little or no change in design.



1. LOWER OPERATING COSTS

Cars with Nailable Steel Floors can handle *all* types of freight. Switching and assembly operations to provide floors suitable for the lading are eliminated. Turn-around time is lowered, car supply improved. Nailable Steel Flooring cuts operating costs all down the line.

2. LESS MAINTENANCE EXPENSE

Stronger structurally, in impact- and wear-resistance, Nailable Steel Flooring cuts maintenance and floor replacement costs because it lasts longer. It's flat and smooth—can't be ripped up by unloading tools. Under normal operating conditions it is expected at last *as long as the car itself.*

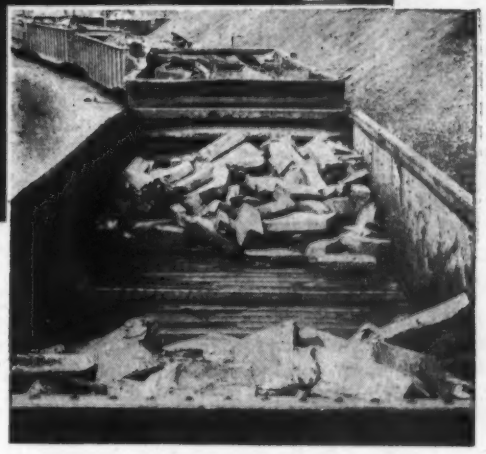
3. FEWER DAMAGE CLAIMS

Nailable Steel Flooring offers greater protection to goods in transit. It is smooth—without splinters or sharp edges—non-absorbent, and permits more secure blocking, because nails are gripped tighter in the channel grooves than in wood. From loading dock to consignee, freight is safer on Nailable Steel Flooring.

GREAT LAKES STEEL

STEEL FLOOR DIVISION • DETROIT 18, MICH.

BETTER BLOCKED AND SKIDDED LOADS! This typical example shows heavy freight in a boxcar equipped with Nailable Steel Flooring.



IT CAN "TAKE IT"! Steel scrap loaded in a gondola. After 16 months of tough steel mill service, this Nailable Steel Floor has retained the over-all flat contour necessary for skidded loads. Nailability is not impaired.

Nailable Steel Flooring is a great new development in freight car construction and offers major advantages over conventional flooring. Because it's tough, tight and nailable, it can handle all types of gondola and boxcar freight—finished goods that must be blocked in place, fine bulk freight that requires a tight car, and heavy, rough material that chews up less durable surfaces.

Made of tough, corrosion-resistant N-A-X HIGH-TENSILE, Nailable Steel Flooring channels are designed for high wear - resistance, impact - toughness and structural strength. Channel surfaces may become dented, but the flanges do not give and the floor remains generally flat throughout its length. After the roughest loading and unloading of the heaviest materials, Nailable Steel Flooring provides a good surface for skidded loads.

Moreover, the rigidity of the channels strengthens the entire car . . . makes it better able to withstand humping and sudden stops. It will pay you to investigate the use of Nailable Steel Flooring for new-car construction and old-car rebuilding. Write for booklet.

N-A-X High-Tensile Steel Offers Superior Properties For Many Railway Applications

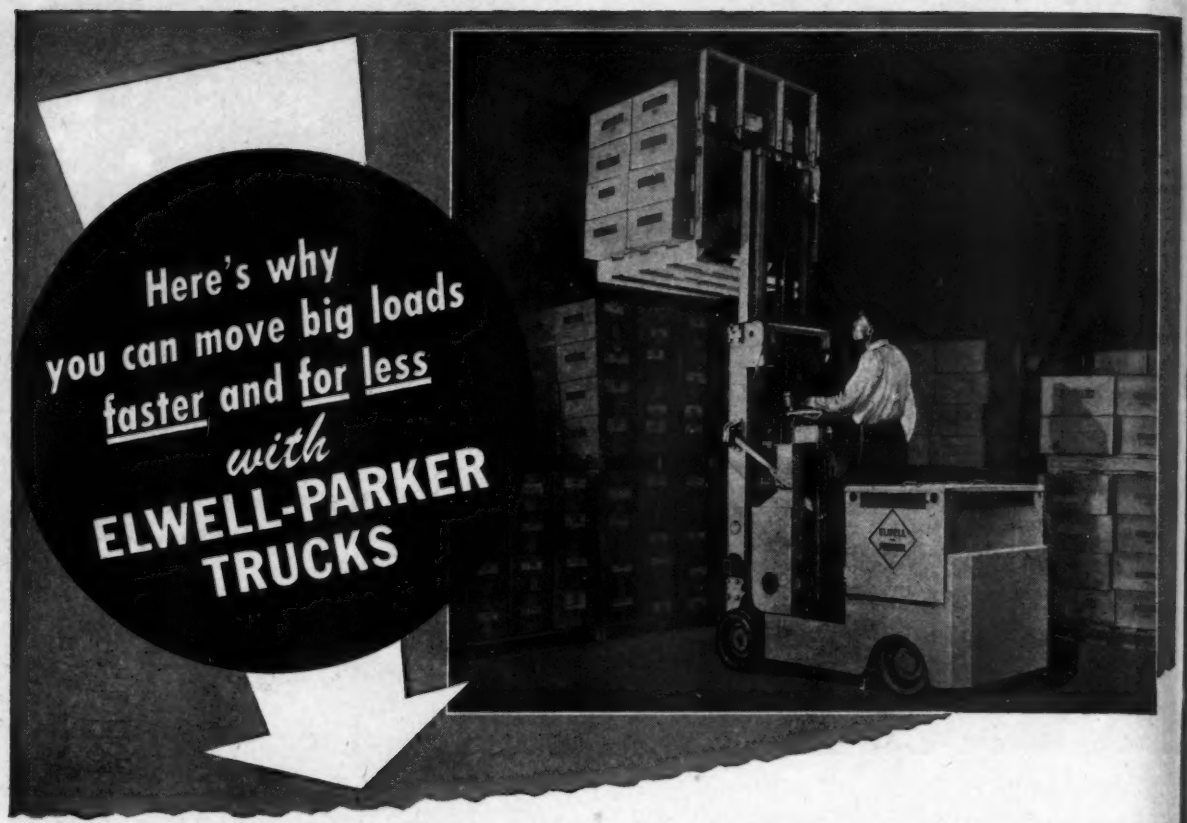
Profitable railway applications of N-A-X HIGH-TENSILE steel are by no means limited to Nailable Steel Flooring. With a 50% higher yield strength than carbon steels, N-A-X HIGH-TENSILE can cut deadweight and increase payloads in many ways. It combines a high degree of strength and toughness with good fatigue- and corrosion - resistance and excellent cold-forming and welding properties.

CORPORATION

UNIT OF NATIONAL STEEL CORPORATION

NAILABLE STEEL FLOORING

A GREAT LAKES STEEL PRODUCT



Elwell-Parker does not supply arbitrary "standard" model trucks; instead E-P engineers "tailor" them to the warehousing or production conditions of the individual user. However, all Elwell-Parker Trucks include these features that insure years and years of satisfactory service:

Positive "On-Off" Controls

Truck cannot move unless operator stands on both pedals Likewise it stops when the driver steps off the pedals, because the brakes are applied and the power is instantly shut off.

Easy Handling

By reducing operator fatigue, insures careful driving. Operators are always alert because E-P trucks have cushioned pedals, easy steering, controlled speed and smooth, quiet operation.

Original, Proven Braking

The brake action is fast—soft yet positive. Brakes can be applied when power is on, so that starting or stopping on ramps is easy and safe.

Safe Driver Position

On both end and center control models, driver can quickly dismount in case of emergency. On center control models the operator can readily get on or off from either side of truck.

Super Strength

Entire truck is of rugged, "tank-tough" construction, using special steels that are riveted and welded together for long term durability.

Extra Power From Motors

They are Elwell-Parker built Class B motors having glass and asbestos insulation—more costly and worth it. Thus the "heart" of every truck is liberally designed to take *all* the battery power.

PLUS
Indispensable Engineering Knowledge

As the pioneer and leader in the field of industrial trucks, Elwell-Parker has unique experience regarding the proper application of industrial power trucks to specific needs.

For actual demonstration of these truck features and helpful advice on *your* materials handling problem, call in the nearest man.

Ask for our handbook, "Industrial Logistics", a treatise on materials handling and distribution. The Elwell-Parker Electric Company, 4110 St. Clair Avenue, Cleveland 14, Ohio.

ELWELL-PARKER

Established 1893

POWER INDUSTRIAL TRUCKS

Delta opens AIR FREIGHT SERVICE to 5 more Southern Cities

Delta now offers you fast, low-cost Air Freight service to new business centers of the South. Air Freight is now carried on all passenger schedules to these additional Delta points:

CHATTANOOGA, Tennessee
COLUMBUS, Georgia
MACON, Georgia
MONTGOMERY, Alabama

Note the map above, to see how these new cities fit into the Delta system and how easily the Georgia and Alabama points can be reached from either the North or West. In addition, service will open soon to the fifth point, Selma, Alabama.

NOW 31 DELTA CITIES

The 31 cities that now make up the Delta flight pattern include the major industrial and distribution centers of the South – the real key points of sales. Delta has fast and frequent schedules to all these points, plus good connecting service from all over the nation.

Delta Air Freight is now in its second year of full operation. It has shown consistent savings of up to 48 hours or more on deliveries from the Mid-West to the South and savings of four days or more from the Far West. Rates are as low as 21 cents a ton-mile. Pick-up and delivery service is available. Whatever your shipping problem, phone your local Delta Air Freight agent. Or write Delta Air Freight Supervisor, Delta Air Lines, Atlanta, Georgia.

Ship Thru Delta Gateways for Fast Deliveries South

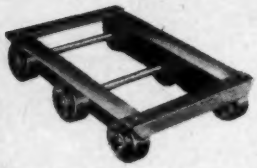
For fast service TO and THRU the South, specify Delta. Ship through Chicago, Dallas or Fort Worth from Western points. And through Chicago, Cincinnati or Knoxville from the central part of the nation. Fast connections, with seven major airlines, at these points.

Delta AIR LINES

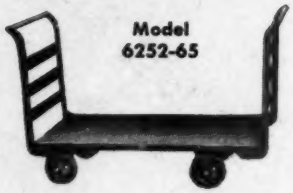
General Offices: Atlanta, Ga.

DELTA AIR FREIGHT—TAKES A LOAD OFF YOUR MIND

Model 6656



Model 6252-65



Model 6024-15

Model 6062

Cut Costs with COLSON

For savings in time, money and effort use COLSON trucks to solve your distribution and products-handling problems.

Colson trucks and casters are engineered products, designed for long service and low maintenance costs.

When you have materials-handling or distribution problems, consult with COLSON for detailed information on our complete line of quality products.

Model 6074-65

Model 3-527-65

Model 6431

Model 6030-94

Colson

THE COLSON CORPORATION

ELYRIA, OHIO

CASTERS • INDUSTRIAL TRUCKS AND PLATFORMS • LIFT JACK SYSTEMS • BICYCLES • CHILDREN'S VEHICLES
WHEEL CHAIRS • WHEEL STRETCHERS • INHALATORS • TRAY TRUCKS • DISH TRUCKS • INSTRUMENT TABLES

Mack has a different angle

Mack connecting rods are different. They're split at a 35-degree angle instead of the usual horizontal split. This means they can accommodate crankpins of exceptional size . . . yet are easily removable through the cylinder bore.

What's more, this construction gives them unsurpassed strength and stiffness . . . concentrated at the point where greatest stress occurs.

That's because the full-trussed cap is retained by cap screws threaded directly into the rod itself in place of the customary bolt connection. Thus, increased stiffness of the yoke is obtained by eliminating the counter bore necessary for the usual bolt-head.

In addition, perfect bearing fit and far greater accuracy and security of the cap fastening is assured because the cap is locked immovably in position by tongue and groove joints on both faces.

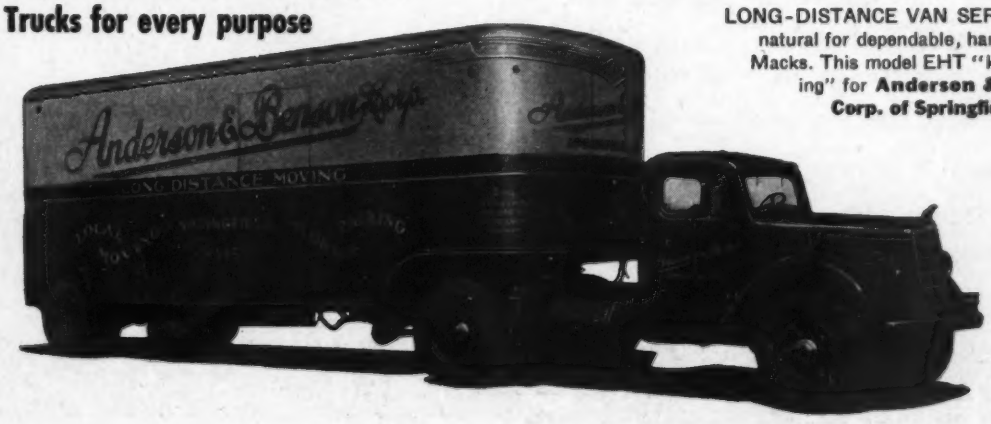
It's differences like this that add up to the big difference between Macks and other trucks. More work goes <u>into</u> Macks — and more thinking, too — so that you can get more work <u>out of</u> them.

Mack

since 1900, America's hardest-working truck

Mack Trucks, Inc., Empire State Building, New York 1, New York. Factories at Allentown, Pa.; Plainfield, N. J.; New Brunswick, N. J.; Long Island City, N. Y. Factory branches and dealers in all principal cities for service and parts. In Canada, Mack Trucks of Canada, Ltd.

Trucks for every purpose



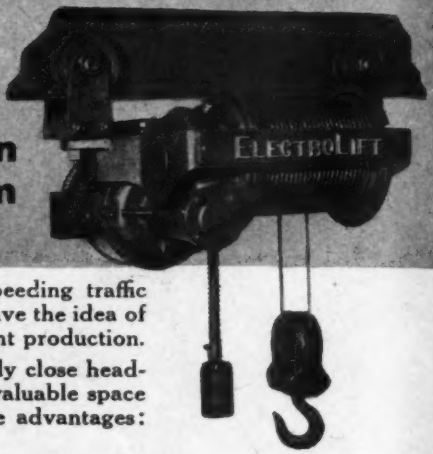
LONG-DISTANCE VAN SERVICE is a natural for dependable, hard-working Macks. This model EHT "keeps moving" for **Anderson & Benson Corp. of Springfield, Mass.**

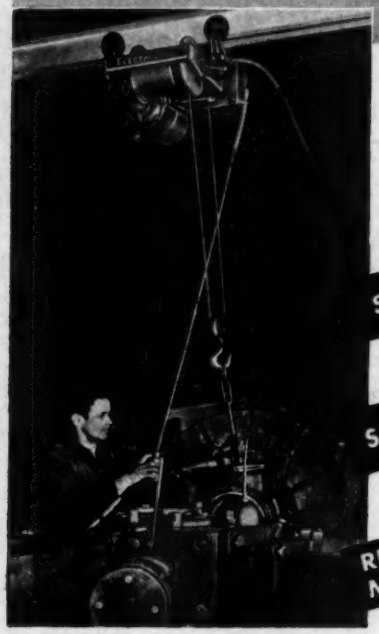
3180.21

fast, easy handling of materials helps make production miracles possible

ELECTROLIFTS

cut time and distance between plant operations to a minimum





For serving a lathe, the operator handles a Monorail ElectroLift with Push Button Control.

Picture an express highway speeding traffic over congested areas and you have the idea of how ElectroLifts streamline plant production.

Built to operate with unusually close headroom, ElectroLifts take up no valuable space themselves, provide all of these advantages:

SAVE TIME

Up to six tons of materials can be moved at once, over the most direct path to the point where needed, without waiting for, or delaying any other operation.

SAVE SPACE

No floor space need be kept open for the flow of materials, equipment can be packed in closer, no depots at machines must be maintained.

RELEASE MAN-POWER

One unskilled man can operate an ElectroLift and move tons of materials quickly, safely and easily. Skilled man-power is thus kept busy on actual production.

Engineering Service — Because of the variety of speeds, capacities and hoists available to meet the most specialized industrial handling requirements, it will pay you to consult ElectroLift Engineers for the type of ElectroLift best suited to your particular needs. Call on this service any time.

Features of ElectroLifts that make them Outstanding in Production Work

Exclusive Worm Drive Mechanism . . . makes ElectroLifts quieter in operation, longer lasting, more compact and efficient.

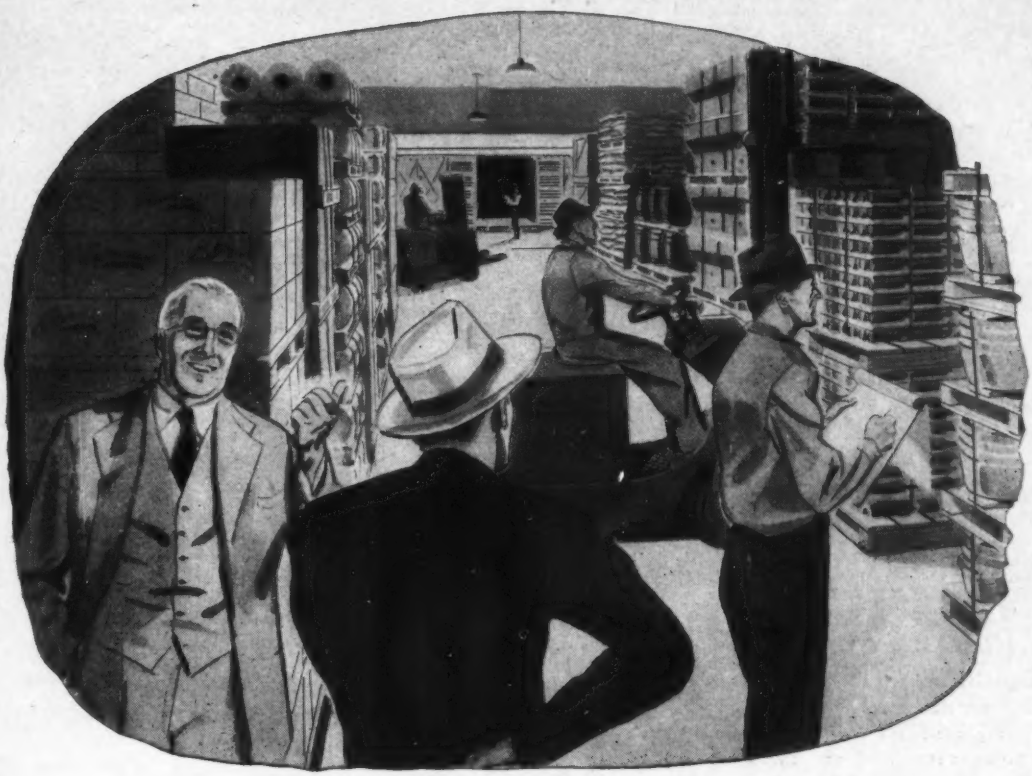
Totally Enclosed Motor. . designed especially for hoisting service.

Large Diameter Drum . . . grooved to prevent cable overlapping.

Choice of Controls . . . cord or push button control, remote control or completely automatic control may be had as desired.

Truck loading is easier with a Monorail Rope Control ElectroLift.

ELECTROLIFT, INC. WORM DRIVE **ELECTROLIFT** HOISTS 30 Church Street, New York 7, N. Y.



"HANDLING COSTS STAY LOWEST WITH Battery Powered TRUCKS"

"Here's a tip from our experience: Watch *over-all* costs—not first costs alone—when you compare industrial trucks.

"For a true comparison, *all* charges—for power or fuel, maintenance, down-time for repairs, as well as interest, depreciation and so on—should be boiled down to one figure, *cost per shift operated*, for each type of truck.

"Using this yardstick, we found that our material-handling outlay was always lowest with *battery power*. Reason enough, isn't it, why we've settled on electric trucks?"

Users who compare industrial trucks on the conclusive basis of *over-all cost per unit of work done* point to these basic savings when storage batteries are the source of power:

USE LOWEST-COST POWER AVAILABLE—Storage batteries bring to mobile equipment the use of central station power—energy of lowest and constantly decreasing cost. Thus the electric industrial truck demonstrates, consistently, an operating cost well under that of other types.

NO IDLING COST—In the intervals between actual load movements, batteries impose no expense for "fuel" or wear. Not only do they give the needed surges of power instantly, but they cut off instantly—so that there is absolutely no power consumption during stops.

TRIFLING MAINTENANCE COSTS—Batteries have no moving parts. A long record of sales of parts by battery manufacturers shows, on the average, a value of about 85 *cents* per year for each battery in service. Preventive maintenance takes but a few minutes weekly.

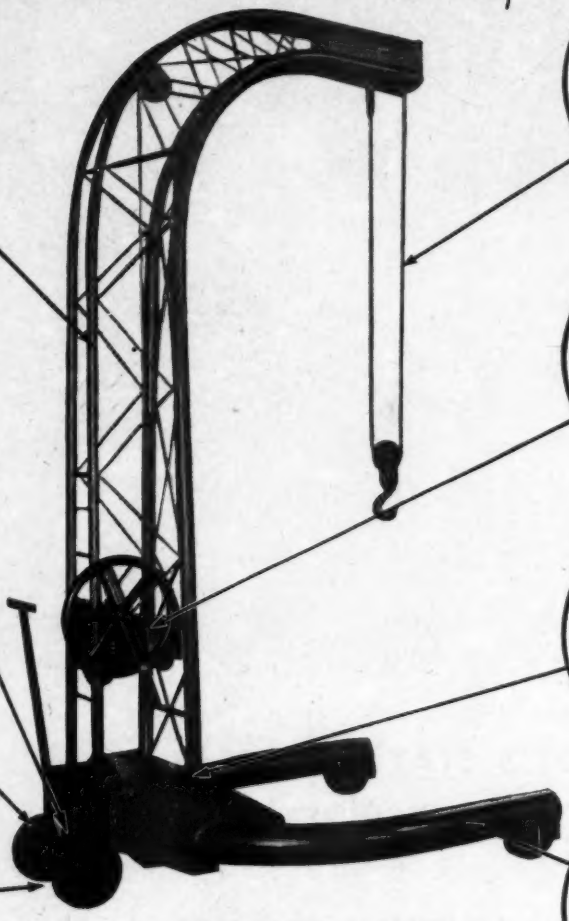
These facts—plus the characteristic ruggedness, dependability and safety of battery-driven units—help explain why over 90% of the electric trucks sold in the past twenty years are still in constant service.

SEND FOR THESE FREE MANUALS

Even if your present system is mechanized, the MATERIAL-HANDLING HANDBOOK and UNIT LOADS offer new suggestions for lowest-cost material handling. Your letter will bring them.

THE ELECTRIC INDUSTRIAL TRUCK ASSOCIATION
208-D South La Salle Street, Chicago 4, Ill.

"The Handiest Tool in the Shop"



Rigid tubular steel mast with cross bracing resists bending under swinging action of load.

Two Speeds: Fast single cable operation for light loads. Slower double cable operation for heavy loads.

Eccentric axle automatically locks wheels when load is being lifted.

Self-locking worm lifting mechanism holds the load safely at any point without ratchet or pawl.

Large diameter, wide faced wheels assures easy one man operation.

Four point wheel suspension on a wide base is practical engineering.

Wide wheel spacing affords additional stability.

Wide sturdy base insures protection against tilting.

HERE'S WHY

A "Canton" CRANE can lift and transport loads with

GREATER SAFETY

HILL ACME TOOLS FOR INDUSTRY

Made in a full range of sizes up to 11 feet clear lift. 3 ton capacity. Bulletin IMF gives complete details.

THE HILL ACME COMPANY

"CANTON" DIVISION • 6400 Breakwater Ave. Cleveland 2, Ohio

ALLIGATOR SHEARS AND PORTABLE FLOOR CRANES • ALSO MANUFACTURERS OF "ACME" FORGING • THREADING • TAPPING MACHINES • "HILL" HYDRAULIC SURFACE GRINDERS • "CLEVELAND" KNIVES AND SHEAR BLADES

CAPITAL AIRFREIGHT

makes profits boomerang!

Fast Capital Airfreight will get products into distributors hands overnight. Bills become due quicker, are paid sooner, and profits come home like a "boomerang".

Capital Airfreight improves your competitive position by getting your products to market faster, with less expensive crating and packing.

You tie up less capital in transit, get a quicker turnover of capital and inventory, and gain *extra* profit.

Capital's new fleet of C-54 Airfreighters with 8-ton load capacity, more flexible handling and stowing apparatus, *plus* new *low-cost rates* make the unequalled speed of Airfreight a highly profitable transportation "buy" for more companies than ever before.

Discover today how Capital Airfreight can meet your specific shipping requirements. Call your local Capital Airlines Cargo Representative now — or write to

NATIONAL AIRPORT
WASHINGTON 1, D. C.

Capital AIRLINES

KNOWN FOR YEARS AS "PCA" . . . ONE OF AMERICA'S PIONEER AIRLINES

They're Here!

New All-Steel

FRUEHAUF

TRUCK BODIES

Custom-Built Quality
Production-Line Priced

YOU KNOW WHAT "FRUEHAUF" MEANS ON A TRAILER . . . NOW, THE SAME ENGINEERING SKILL BRINGS YOU BETTER TRUCK BODIES!

The "know-how" that has made Fruehauf the world's largest builders of Truck-Trailers, now has developed new all-steel truck bodies in 3 popular sizes. And Fruehauf's tremendous production facilities bring you top-quality construction at lowest prices.

Fruehauf's nation-wide network of Factory Branches simplifies distribution and backs sales with a new type of Factory Service.

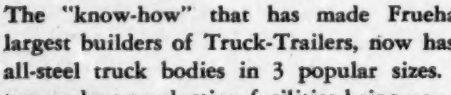
Fruehauf Factory Branch stocks solve the delivery problem everywhere. ***See these bodies now on display at your Fruehauf Branch.***

FRUEHAUF BODY FEATURES

- 12-14-16-ft. sizes available now.
- Side and rear door design to fit your need.
- All-Steel, Aerovan-type construction, including doors.
- Heavy-duty Trailer-type cam locks on doors.
- Exceptional strength—yet light in weight.
- Fruehauf's famous Steel-Ribbed reinforced 1-1/16 inch flooring.
- Available with open or closed tops.
- One-Piece reinforced roof coving.
- Fruehauf Branches relieve you of all assembly and mounting work. Also available K.D.

SPECIFY FRUEHAUF . . .
The Name that Carries Weight!

FRUEHAUF TRAILER CO. • BODY DIVISION
DETROIT 32
67 Factory Service Branches



4 Basic Models . . . Hundreds of Combinations!

FRUEHAUF TRUCK BODIES

EDITORIALS

Standardized Handling

WHILE THE BASIC mechanical principles of materials handling are very ancient, the broad application of these principles to problems of mass production and worldwide distribution have been a development of the past quarter century. New uses of old principles, introduced during and immediately after World War I, were employed extensively and intensively for the handling of freight during the second World War. Many wartime innovations and developments in mechanical handling are now established practices in commercial operations, in both production and distribution. More and more, materials handling is being viewed as a continuous process, as one which begins with the movement of raw materials at the point of origin and continues through production and subsequent distributive steps until the finished product is in the hands of the ultimate consumer or user.

Since materials handling functions at points where one productive or distributive activity connects with another, the need for standardization of fundamental elements of present day equipment is becoming increasingly apparent.

Elsewhere in this issue, Nathaniel Warshaw, who has been prominently identified with the materials handling industry for the past 25 years, tells us, to take one example, of the economies which would result from a standardized lift truck system. Standardization of lift truck fundamentals, Mr. Warshaw says, partakes of the fundamental considerations involved in determining the track gauge of a national railroad system. If the hand truck is standardized, so eventually will be the skid platform, pallet, and also the gas or electric powered lift truck that serves them. These in turn will affect other associated equipment and activities and the overall result will be tremendous and widely distributed economies in the costs of distribution.

While it is true that the introduction of mechanized equipment has greatly reduced the number of handling injuries to workers, we feel, nevertheless, that the interests of the industry would be advanced through the standardization of operating controls. A standardized control mechanism would minimize accidents to workers who are transferred from one type of equipment to the other and make the increased security afforded by mechanized handling over manual handling increasingly evident.

The power truck obviously is one of the safest means of factory, warehouse and terminal transportation but accidents, nevertheless, do occasionally occur. Most of these could be obviated if proper mechanical safeguards were provided.

"With a lift truck," to quote from a pamphlet issued by the National Safety Council, "one workman can do work that would otherwise require several men. In addition, several motions hazardous to hands, feet and back are fully eliminated, with the result that many serious injuries from handling material manually are greatly reduced.

"Manufacturers of power trucks are concerned about accidents that may occur through the use of their products; but since a large percentage of the trucks are built according to customers' specifications, manufacturers are not always free to incorporate safety features. The most urgent need in truck construction is for standardization of operating controls."

The Escalator Clause

THE ESCALATOR clause, so much a part of current contracts for industrial equipment and goods, is beginning to reveal itself as something of a two-edged sword. While seeming to safeguard the best interests of manufacturers during these trying days of advancing labor and materials costs and of unparalleled shortages in vitally needed supplies, it is in reality militating against these same best interests. To illustrate, let us cite the situation now existing in the materials handling field.

The production schedules of the manufacturers of materials handling equipment are in large part based upon their distributors' back log of orders. This back log, admittedly enormous, nevertheless is smaller than the volume of existing orders would suggest. Users of materials handling equipment, faced with the prospect of inordinately delayed delivery because needed raw materials and parts are not available to equipment producers, have resorted to the practice so common in the passenger car, radio and other fields, of duplicating orders. These orders are placed not only with distributor A but with distributors B, C, D, E and F as well. The intention, of course, is to accept the first equipment delivered and cancel duplicating orders. Meanwhile, the escalator clause is operating to increase prices far beyond original estimates and to cause purchasers, in increasing numbers, to refuse delivery when finally made. As a result, many distributors, whose overhead has been increased tremendously, find themselves in serious plight. Some have been forced out of business and that many others will be forced to suspend operations is certain. The manufacturer, who must be hurt in the end, can do much to remedy this situation by eliminating the escalator clause from his sales contracts.

D. J. Witherspoon

Editor

NEXT MONTH

THE August issue will deal largely with the uses and abuses of highway transportation. Some of the major features scheduled include:

DEVELOPMENTS AND TRENDS IN HIGHWAY TRANSPORTATION . . . Staff correspondents and transportation authorities in industry discuss current developments and trends in highway transportation and the need for more efficient coordination with other distributive agencies . . . Economical transportation involves more than rates and delivery schedules since costs are affected by handling methods, by packing and packaging, by warehousing and by other activities in the flow of goods. DA for August will feature many practical and suggestive articles on the subject.

●

WHAT IS DISTRIBUTION COST . . . Fred Merish, special correspondent, questions the validity of applying to the ramifying problems of distribution the standard which has made production so efficient . . . productivity per man hour. This is a provocative article.

●

WHOSE HIGHWAYS ARE THEY? . . . Harry S. Elkins, Interstate Commerce Attorney, will discuss efforts now being made to obtain a ruling from the Interstate Commerce Commission which will have the effect of driving from our highways shippers who are engaged in transportation for hire according to the proposed definition.

●

SHOULD MOTOR TRUCKING WORK OUT ITS OWN RATES? . . . Russell A. Morin, assistant general traffic manager, United States Gypsum Co., emphatically answers "yes" and tells us why.

LETTERS to the *Editor*

Modern Handling

Sir:

We have been receiving copies of DISTRIBUTION AGE for some time and your articles on various types of handling merchandise is of special interest to us. Your article in the May issue entitled, "Modern Handling Cuts Loading Time in Half" is of special interest because of its very timely story.

Our company, a motor carrier operating along the Atlantic Seaboard between New York and Philadelphia, had to face some hard facts very recently relative to the handling of less-truckload merchandise. As you may or may not be aware, the trucking industry has not always fared too well from a financial standpoint. Faced with depressed rail rate competition on less-truckload traffic the industry has had a long and hard struggle to keep above water. Hermann Forwarding Co. was numbered among these struggling carriers.

We finally decided that the best way to meet the situation was to install small gasoline-powered lift trucks, and to date we have two of them working at our New Brunswick terminal. We believe that we are one of the first carriers in the area to install such equipment and because of the substantial savings we have been able to effect, we thought that you might be interested.

—Fred C. Hermann, Traffic Manager, Hermann Forwarding Co., New Brunswick, N. J.

o o o

Deep Water

Sir:

With the hope that you will find it interesting and informative, we are mailing to you today a copy of the Fourth Edition of our publication *Deep Water*. You are certainly doing a fine job in helping to inform the public with respect to the vital value of the federal waterway system.

Our purpose here is to present facts, figures and illustrations, in compact form, showing the benefits to the nation from its waterways and harbors; to refute selfish propaganda against them; and to point out the interdependency of waterways and railways.

Deepening and widening waterways rarely makes any difference in their appearance. Thus it is, around and throughout the nation: Indispensable harbors, waterways, and floodways are developed. Most people know little or nothing of what is being done. Consequently, they have no conception of what such improvements mean to the nation's commerce and defense. It follows that, the all embracing support which their essential worth entitles them to is lacking. Picture America without its deep harbors and navigable channels!

Continuing growth of the nation is largely dependent upon waterway development, as past growth has been. In addition to their intrinsic value, the improvements provide constructive employment. They also stimulate business directly in improvement areas and indirectly throughout the country. They are productive, permanent assets. All in all, no other federal expenditure of like amount is more beneficial to the nation or to the people. Certainly, no other federal expenditure is subject to closer scrutiny.

We look upon this book as a public service. Your criticism will be appreciated.

—Wendell Phillips Dodge, Editor, THE MARINE NEWS, New York.

o o o

HR-2657

Sir:

We thought you would be interested in knowing the Alumni Association went on record unanimously against proposed bill HR-2657.

The following letter was sent to the Senators and Congressmen of the states of New York and New Jersey:

"The Alumni Assn. of the Traffic Managers Institute of New York with a membership of over 600, at a regular meeting held on April 17 at New York, went on record unanimously, as opposed to Bill HR-2657.

The reasons for our objections are:

1—It discriminates against licensed I.C.C. Practioners and men in the traffic field, who are thoroughly familiar with all phases of transportation matters.

2—Most attorneys are not qualified to represent industrial concerns before the I.C.C. Board because of their lack of knowledge of the transportation problems, which come under the jurisdiction of the Interstate Commerce Act.

3—It would result in harm and injury to the public and small shipper by making simple small cases too costly, as they would be

(*Continued on Page* 76)

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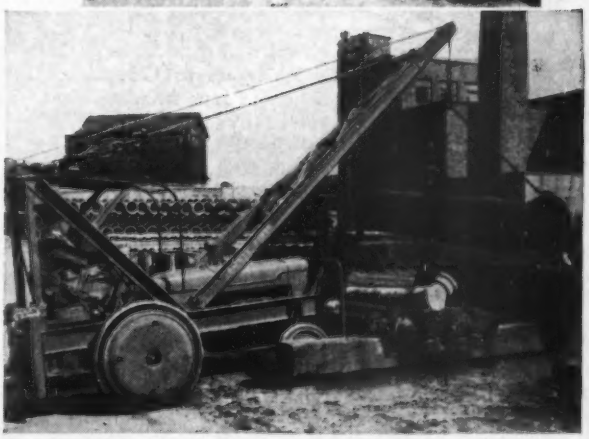

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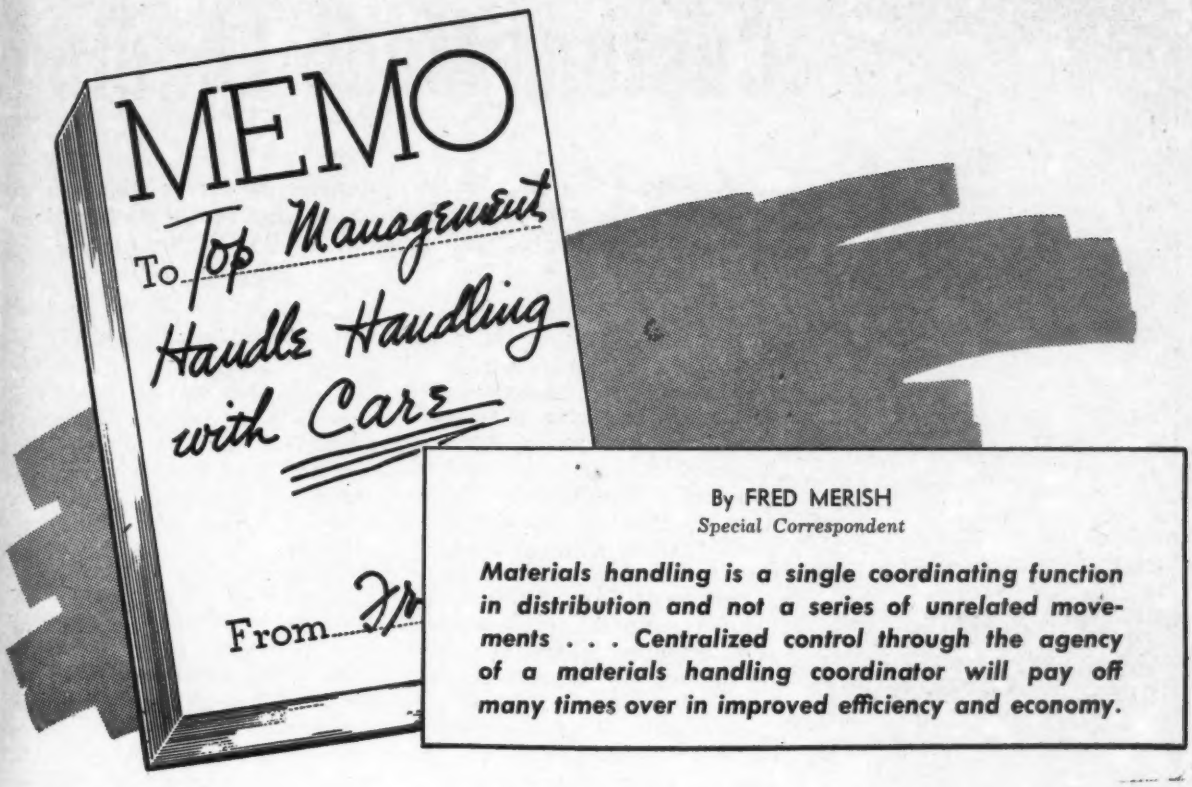


To Top Management Handle Handling with Care

By FRED MERISH
Special Correspondent

Materials handling is a single coordinating function in distribution and not a series of unrelated movements . . . Centralized control through the agency of a materials handling coordinator will pay off many times over in improved efficiency and economy.

TOO often general management concerns itself primarily with the marketing phase of distribution, leaving the handling phase entirely to subordinates. As a result, many handling operations are badly coordinated, maximum economies are not effected and production schedules are upset. Materials handling is a separate function of operation. Business recognizes the importance of the sales director, personnel manager, credit and collection manager, plant supervisor and advertising manager, but few concerns appreciate the importance of a materials handling coordinator. As a consequence of this lack of centralized control, handling becomes a series of unrelated movements instead of a single coordinated function.

In many plants the employment of a materials handling manager may not be feasible. But there is no reason why general management cannot step up the efficiency of handling operations by consulting periodically with all executives who have direct contact with interplant product movement. The consultations should include the production manager, cost accountant, men in charge of raw storage and finished production, the yard supervisor, packing and shipping department heads, the traffic manager, and even the sales director who is vitally concerned with shipment of goods to customers. In no other way can management achieve effective coordination in materials handling . . . and coordination is a big factor in efficient and economical movement.

One reason why management takes too little interest in materials handling is a lack of understanding of its costs. The figures do not appear on the profit and loss statement in bold relief because they usually are buried in production, shipping, storage or packing costs. Because of intricate overlapping in materials movement, from the receiving platform to the carrier, it is hard to earmark handling costs by means of ordinary bookkeeping recordings. Compilation requires special costing forms that list the maintenance costs on conveyors, hoists, tiering machines, pilers, trucks, etc., the number of units handled by this equipment, the labor cost of handling and time studies. Few managements gather such information; yet, in some plants, where handling costs have been carefully analyzed, the results have shown that it costs more to move goods than to make them. This may sound incredible to some but it has factual support from competent handling engineers who have made extensive handling surveys.

Under the circumstance, materials handling is too important a factor on the profit and loss statement for any management to ignore or to bury its cost in overall figures so that they cannot be studied separately for betterment. Many managements are blind to the havoc their handling cost plays in overall cost because they make no provision for an independent study of handling problems.

However, even where figures are compiled, mere analysis of these costs may not permit dependable conclusions. Low-cost equipment may be a high-cost factor in overall operating expense because it can slow up production, create bottle-necks, and necessitate too much re-handling; the system may be too sluggish to conform to changing requirements. On the other hand, equipment with a high

(*Continued on Page* 60)

Custom-Made Loading

Custom-made loading means greater customer satisfaction through greater service to customers . . . But it must be based on precise knowledge of the facilities available for unloading.

SHIPMENTS to certain, inland South American countries must be packed in cartons and crates of restricted dimensions and weights. Strange as it may seem, the criterion used in establishing these limitations is the materials handling capabilities of a *mule!* Of course, there is an excellent reason for this seemingly absurd regulation. The country has no outlet to the sea; all cargoes must be transported over mountain trails from the nearest seaport. Since only mules can negotiate the treacherous trails, all shipping containers are limited to the weight- and volume-capacity of a mule's back. Packages which exceed the limitations are opened and at the shipper's expense are repacked to conform to the regulations.

Fig. 1. Advantages of glued unit load are lost with wrong unloading.

To find a situation that is comparable, although not quite as colorful, the reader need not take an ocean voyage to sunny South America or, for that matter, go much further than his own back yard, in his own plant. For the sake of discussion, we can assume that in such a plant everything to do with loading and unloading freight cars is mechanized; materials handling is an applied . . . not a theoretical . . . science. We can assume further that into this area of scientific materials handling a train pulls up to the siding, drops off a flat car carrying a huge crate, and then puffs away. The crate is beautifully constructed with braces and crosspieces and eyebolts . . . it is, in short, a true masterpiece of the shipper's art. There is however, one flaw that distorts the otherwise perfect picture. The package was designed by the shipper for crane handling . . . the plant does not possess a crane that could possibly hoist a load of this type. This one example could be told in a thousand versions . . . palletized loads received in plants that use platform trucks, non-palletized loads where fork trucks are used, and so on. These and all other examples that could be given are nothing more than variations of the tale of the South American mule.

It is obvious that no individual plant can afford to own even a small fraction of the many different types of materials handling equipment now on the market. It is equally obvious that each of the

Fig. 2. Use of dunnage or pallets is needless here. Trucks and tapered forks are the answer.

Fig. 3. Carloader handling crated ice makers. The box car is a special type. No dunnage needed.

to Your Specifications

By BENJAMIN MELNITSKY

Special Correspondent

different equipments is designed to do certain jobs best of all, other jobs it does fairly well, and still others it cannot do. Just as there is no machine tool that can perform all machining operations, so too is there no device that can do all materials handling jobs. In plants where most incoming goods are shipped in open top freight cars, cranes are used satisfactorily. In other plants the bulk of freight is received in box cars; therefore, fork trucks or other motor-driven, wheeled materials handling devices are used. Small plants often find that their modest needs are met by using hand trucks. In each plant there is a natural selective process whereby the choice of materials handling equipment for handling rail freight is limited to a few types. This process is based primarily on the general characteristics of shipments received in the plant.

This condition has a direct bearing on shipping practices since each materials handling device can not handle all types of shipments. A crane cannot operate with maximum efficiency in handling palletized loads. A crane with a two-ton weight capacity cannot handle three-ton loads. In many ways, each materials handling device is like the South American mule with distinct and limited materials handling capabilities.

For any given plant the factor of materials handling devices is relatively inflexible. A fork truck with a 7,000 lb. weight capacity does not appear on the scene merely because a certain, unusually heavy load is received. How-

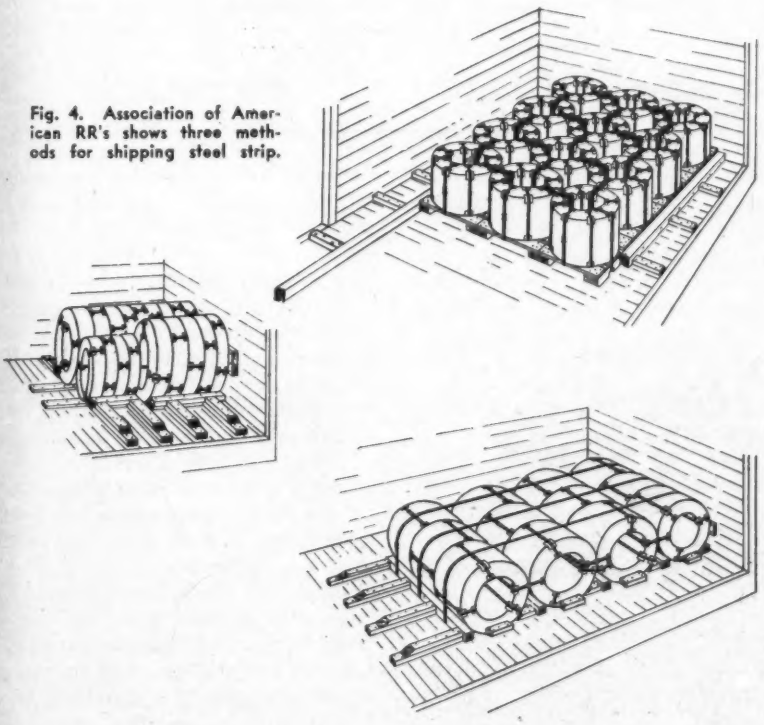


Fig. 4. Association of American RR's shows three methods for shipping steel strip.

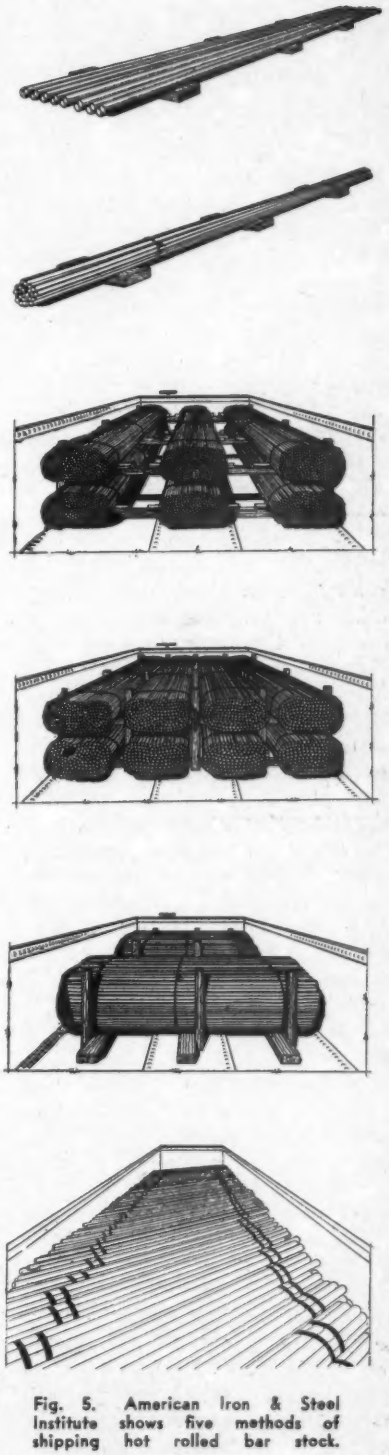


Fig. 5. American Iron & Steel Institute shows five methods of shipping hot rolled bar stock.

ever, the nature of materials to be handled can be extremely flexible. One type of material can be shipped in a great many different ways. For example, any of the following methods can be used for shipping hot rolled steel bars: 1. Bars can be loaded loose without dunnage or wiring where cars are to be unloaded by hand or magnet. 2. Bars can be shipped loose but separated in rows by dunnage where bars are to be unloaded by hand or by crane. 3. Bars can be wired a few to a bundle and placed on dunnage if car is to be unloaded by hand or by a low-weight-capacity crane. 4. The bars can be wired together in large bundles and placed on dunnage if heavy duty crane is to be used in unloading. 5. Bars can be bundled, placed on dunnage, and separated by vertical dividers to facilitate crane unloading. 6. Bars in the car can be placed lengthwise, crosswise, or at an angle.

Strangely enough, no matter how the shipment is loaded, it will never be the best method for all customers. There can be no *best* method of shipping bars or any other material until such time as all customers use precisely the same materials handling equipment and follow identical unloading practices. However, as such a condition does not exist, and probably never will exist, shipping methods must vary in accordance with the different materials handling systems at the plants of different customers. This can be termed the factor of *custom-made loading.* Custom-made loading, like custom-made tailoring, is adapted to the unique requirements of individual customers.

Custom-made loading has all the advantages that a custom-made suit has over a ready-made suit with the distinct exception that custom-made loading does not always entail added costs. In many cases, it is cheaper. This can be seen by using again the example of bar stock shipments. Of the six methods listed above, the first (shipping bars loose) is the cheapest. However, few vendors would dare make all bar stock shipments in such a manner because only a few customers are equipped to unload with magnets. Because of this, such a loading method will probably not be used despite the fact that it is economical and despite the fact that in many instances it is a satisfactory method from the customer's viewpoint. On the other hand, if custom-made loading is practiced, the cheaper method would be used for those customers who have magnets.

Of course, in many instances, custom-made loading does entail extra expense. However, this extra cost, when incurred, is justified to a great extent. Obviously such a system simplifies for the customer the unloading of freight cars. In addition it enables the customer to attain maximum return from money invested in materials handling devices. Equipment does not stand idle while manpower is used to handle difficult shipments. This factor gives rise to the following: 1. Cost of unloading for the customer is reduced. 2. Manpower is not taken away from regular work to aid in unloading freight cars.

(*Continued on Page* 68)

Questionnaire for Custom-Made Loading

Custom-made loading, like custom-made tailoring, must be based on a precise knowledge of a customer's measurements. Here is a questionnaire designed to elicite information as to a consignee's facilities for the mechanized unloading of freight and thus enable custom-made loading. Other questions can be included to meet special cases.

Describe plant facilities for handling shipments in freight cars .....
.....
.....

Indicate location of spur line, availability of receiving platforms, etc. .....
.....
.....

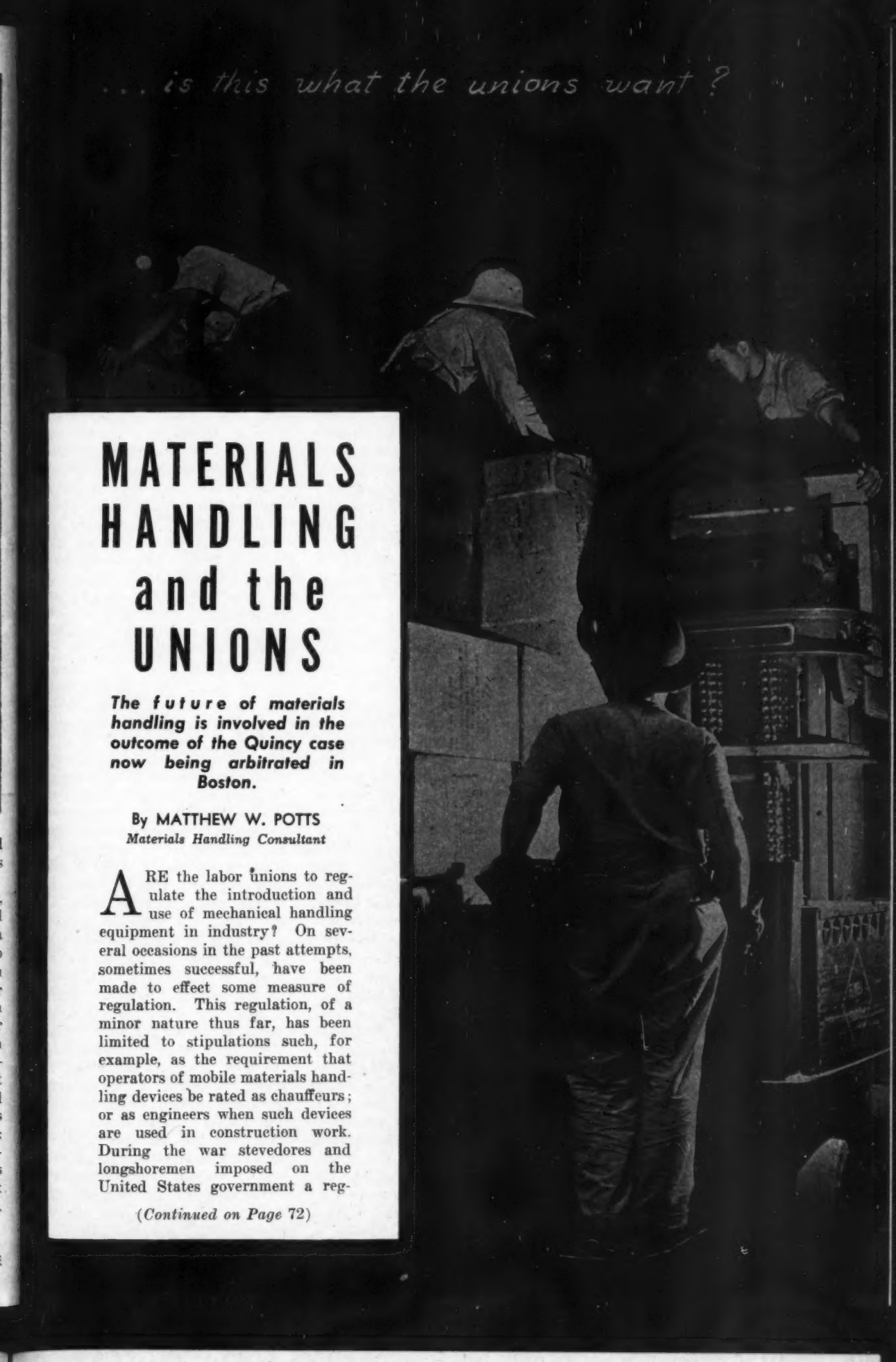
Check the following materials handling devices used for unloading freight cars. (Indicate manufacturer name, weight and volume capacity, and other facts that will indicate materials handling capabilities of equipment)

( ) Fork trucks .....
( ) Low-lift Platform trucks .....
( ) High-lift Platform trucks .....
( ) Battery-powered hand trucks .....
( ) Hand Trucks .....
( ) Special Trucks:
  ( ) Scoop Truck .....
  ( ) Roll handler .....
  ( ) Reel handler .....
  ( ) Bosh truck .....
  ( ) Crane car .....
  ( ) Articulated Sheet Handler .....
  ( ) Others (please describe) .....
  .....
  .....
( ) Crane .....
( ) Crane Accessories:
  ( ) Magnet .....
  ( ) Paper tongs .....
  ( ) Box Grabs .....
  ( ) Others (please describe) .....
  .....
  .....

Are you willing to pay deposits for pallets and skids? ( ) YES ( ) NO
Can you return used pallets and skids? ( ) YES ( ) NO How soon? .....
Are you planning to purchase new materials handling equipment in the near future?
If yes, please describe .....
.....
.....

Please indicate procedures followed in handling materials during unloading of freight cars.

Shipments to certain inland countries in South America must be packed in cartons and crates of restricted dimensions and weights in order to meet the materials handling capabilities of a mule.



MATERIALS HANDLING and the UNIONS

The future of materials handling is involved in the outcome of the Quincy case now being arbitrated in Boston.

By MATTHEW W. POTTS
Materials Handling Consultant

ARE the labor unions to regulate the introduction and use of mechanical handling equipment in industry? On several occasions in the past attempts, sometimes successful, have been made to effect some measure of regulation. This regulation, of a minor nature thus far, has been limited to stipulations such, for example, as the requirement that operators of mobile materials handling devices be rated as chauffeurs; or as engineers when such devices are used in construction work. During the war stevedores and longshoremen imposed on the United States government a reg-

(*Continued on Page* 72)

A Standardized Lift Truck System

WOULD RESULT IN TREMENDOUS AND WIDELY DISTRIBUTED REDUCTIONS IN THE OVERALL COST OF DISTRIBUTION

THE lift truck system began to be commercially used about thirty years ago. The manufacturers of the first trucks were not originally engaged in the building of materials handling equipment such as industrial trucks or trailers. They, therefore, were not familiar with certain fundamental principles connected with the handling of heavy loads. As a matter of fact, the first lift trucks were commercially used in paper mills. Paper mills were rather well-planned, even at that time and had very good floors. The loads were heavy but the floors were kept clean and free from debris. They were hard-surfaced, either of hard wood or concrete and were kept in generally good condition. This is probably the reason that a great deal of attention was not paid to the size of the wheels. As a result 6 in. dia. wheels were considered adequate for the handling of heavy loads in these plants. At that time, however, the manufacturers of ordinary industrial floor trucks were used to using large wheels from 12 in. to 16 in. in diameter. These manufacturers recognized that for general use a large wheel was necessary to transport heavy loads because most floors were likely to have more or less debris, inequalities, thresholds to overcome, irregularities from floors to elevators, moving on and off of motor trucks or in and out of freight cars. This experience was not available to the originators of the lift truck system. Had they appreciated the value of large wheels in transporting heavy loads over average floor conditions, there is no doubt that they would have adopted a larger wheel than a 6 in. wheel.

As other manufacturers began to produce lift trucks they became appreciative of this fact and began to use 7 in. wheels, later 9 in. wheels and finally 10 in. or 11 in. wheels in the lift trucks. This is the reason why there are four different sizes of lift trucks insofar as lowered height is concerned, requiring four different sizes of lift truck platforms or skids. It was not easy to obtain general acceptance of the lift truck in industry and as a result the growth and use of the lift truck system was quite slow.

During World War I it received a certain amount of impetus to accelerate the handling of materials in large war plants. The system did not become well-known until about ten years after the first world war. It then began to grow more rapidly and received attention from some of our largest plants as well as from the U. S. Dept. of Commerce. About that time when the value of lift truck systems was beginning to be recognized as an important adjunct in the shipment of goods from plant to plant the Dept. of Commerce recommended that two sizes of lift trucks be favored, namely, the 7 in. lowered height and the 11 in. lowered height. The importance of this recommendation was recognized for several reasons. It was desired to integrate the hand lift truck system with the power lift truck system and it was found rather difficult to design suitable power lift trucks if wheels smaller than 7 in. were specified. Even 7 in. wheels are small for for power use as they must be of cushion rubber.

The lift truck system is practically the only adequate universal system of handling materials whereby materials can be shipped from one plant to another regardless of the distance and be handled over common carriers such as motor trucks, railroads, ships planes etc. A great many plants today have become accustomed to using this method of handling. It is a common sight to see motor trucks loaded with lift truck platforms; to see freight cars handling them, transporting them over great distances. In large cities loaded skid platforms will be found lining sidewalks in the commercial districts. The paper industry itself has become almost entirely dependent upon this means of handling their heavy loads. It is a well-known fact that paper from the paper mills can be shipped long distances to a printing plant where the paper is printed, then to a bindery at another location and finally completed books or magazines will arrive at the distributors' warehouses for final disposition on skids. In all this period except while the material is actually being processed through machines, it is handled entirely on platforms. It is very evident now that

Nathaniel Warshaw has been associated with the materials handling industry for more than 25 years. "The adoption of a standard lift truck," he says, "would have as far-reaching effects as would the adoption of a standard gauge railroad system throughout the world . . . Standardized lift trucks would result in tremendous economies in distribution."

By NATHANIEL WARSHAW

Manager, Materials Handling Division
Market Forge Co., Everett, Mass.

a serious error was made when one standard skid platform height was not adopted. Looking backwards it appears that the reason was entirely due to the selection in the beginning of a wheel size which was not adequate. Each time the wheels size was increased the system became more practical until finally the largest wheel size was obtained. Surely if the original lift trucks had been built with 11 in. lowered height there would probably have been very little need of lower height units for standard operation. Of course, special lift trucks could always have been made to take care of the unusual situation. This is a common solution to any special problem where machinery is involved. Hand in hand with the development of the standard equipment there is bound to go along the development of special equipment. On the other hand, this special equipment should be recognized as such and in no way interfere with the proper promotion and use of the standard equipment.

Just imagine the situation today if one standard height lift truck had been used. The railroads would have no problems in unloading carload of skids. Each factory using lift trucks would know beforehand that their trucks would handle any load which would arrive at their door either by freight car or motor truck. Power equipment, too, would be of standard height and could give better performance due to the large wheels. Rough floors, freight car offsets from loading platforms would offer no problem. The men engaged in hauling the heavy loads would encounter very little difficulty in rolling the loads over normal obstructions which are common to every plant. Not only should the lowered height have been taken into consideration but also the width of the lift truck. In the beginning 18 in. wide lift trucks were considered adequate for most skid platforms, probably because the skid platforms were smaller and also because their construction was far different than the conventional type of skid platform today. It certainly would have been much better if the standard lift truck had been created with a platform at least two ft. wide. This would have meant more stability in handling the heavy loads and would have insured that any lift truck could handle any skid platform and there would not have been the variation due to lift truck width.

It is found many times now that a certain skid platform cannot be handled by every truck as it was designed to be handled by a narrow truck and the user who has a wide truck is unfortunate. Length of lift truck is also important. In general, however, skid platforms are about four ft. long and a lift truck which is four ft. long can handle a skid platform 60 in. long or even longer if the center of gravity does not lie behind the rear wheels of the lift truck. It is only when the center of gravity

Standardized lift trucks would lead to the eventual standardization and simplification of related elements including

of the load lies behind the center of the rear wheels that the lift truck is then found inadequate. So you can readily see that had the system been based on a lift truck 11 in. high and 24 in. wide and approximately 48 in. long we would now have a universal method of handling. Every plant with a lift truck would handle the loads from practically any other plant. All common carriers would be equipped with lift trucks which would handle practically any load they would ever be asked to ship. The extension of the service would become world-wide. Its effect on the distribution costs would have been tremendous. If this 11 in. height had become known as the universal or standard height very few would have considered lower height skids unless the situation was such as to warrant it. At any rate, the change would have been carefully considered by both the buyer and the seller. Unfortunately all the merits of the lift truck system have been slow in being recognized by manufacturers, purchasers and individual salesmen. For some reason they have not fully appreciated the value of the device which had been created so long ago for the efficient handling of material. There is no other system which can be considered so practical for the transportation within a plant as well as outside of it. There is no other system which is so easily provided with the mechanical means of movement through the use of power lift trucks as well as the auxiliary use of hand lift trucks when necessary.

The ability to use high lift trucks to tier these units or to use portable elevators for the same purpose gives the system both practicality of motion for horizontal directions as well as vertical directions.

Let's forget for a moment that the lift truck system does exist. Let us imagine that we are about to design a new unit with the features which practice has proven necessary. Let us agree that the height of 11 in. is adequate, also that the width of 24 in. is satisfactory and that the common length should be about 48 in. Now there are still other things to consider. After all the hand lift truck is intended to move heavy loads, loads of the order of two to three ton. They are to be pulled by human beings. It is not always possible to utilize power. Power might be used for the very long hauls or for the plants where there is ample room but the hand lift truck must be used where there is congestion and where the situation does not warrant the use of power equipment. Nevertheless, it must be borne in mind that power equipment should be interchangeable with the hand equipment.

The next important thing to consider is the wheel itself. They certainly should be concentric so that no vertical movement on the level floor will result due to the eccentricity of the wheels because we know that the slightest vertical movement means the consumption of energy and that energy can come from only one source and that is the human operator. As long as the operator is assured of moving the load over a perfectly level floor the energy necessary to do this is very slight.

The writer, himself, has made practical tests loading trucks with heavy loads and supporting the wheels on an absolutely level, hard surface. It was found then that a 5000 lb. load could actually be started and continued in motion with a force as little as 3 lb. to 5 lb. This seems almost unbelievable but it actually follows the laws of physics. The reason that loads on ordinary floors do not move so easily is because the floor may be soft and the wheels become slightly embedded in the surface even though it is a microscopic amount or dirt, nails, pieces of wood etc. may be required to be rolled over. Having determined that a concentric wheel is a necessity and that the wheels should have ample face width to properly distribute the load over the floor, the next thing to consider is the bearing. It would be no exaggeration to say that the bearing with the least amount of friction almost regardless of cost should be the bearing to select when human power is to be the means of locomotion. Any other type of bearing would mean lower efficiency. It would mean harder starting and more drain of energy for the human operator. Most engineers would probably agree that the modern sealed ball-bearing should make an ideal bearing for lift trucks when consideration of maximum efficiency is desired. We can, therefore, see that if the load is supported on four wheels, all of which are concentric and all of which are mounted on high efficiency ball-bearings, that the greatest ease of movement would be attainable. Of course, the floor should not be neglected and although it is not a part of the lift truck, it is a determinate of the efficiency of operation. Too much cannot be said about the importance of a hard, level floor. Levelness is of paramount importance. The slightest upward grade further requires energy on the part of the operator as he is actually lifting the load against the force of gravity. The hardness of the floor is to prevent imbedding the wheels, even slightly, due to the heavy pressure. Naturally, floors should be kept as clean as possible as this will pay dividends by eliminating the small obstructions which also drain the energy of the operator.

In certain plants a very slight slope (¼ in. 10 ft.) would be very beneficial in the direction of flow of material. Some plants can be laid out with the full knowledge that the loads will all travel in one direction and there will rarely be any back-tracking. Under such circumstances it is easily seen that the minutest grade would be very favorable to the operator in hauling heavy loads.

In the preceding we have been thinking mainly of metallic wheels because of the fact that they can be maintained absolutely concentric. However, a very wonderful discovery was made about ten years ago which too many people, unfortunately, are not familiar with. This is the ability to manufacture rubber wheels of a certain compound which has the very wonderful quality of rolling over floors with minor obstructions with even greater ease than a perfectly ground metallic wheel. This fact has been proven time and again. During the war these wheels were not available except when they

(*Continued on Page* 55)

Britain's Nationalization Program

A discussion of the political and economic pressures responsible for Britain's proposed legislation to nationalize transportation.

By G. LLOYD WILSON

BRITAIN'S Transport Bill providing for the compulsory acquisition by the British National Government of all railways, canals and inland waterways, intercity road transport operations, the passenger transport operations in metropolitan London, and auxiliary transportation facilities including railway cars or goods wagons, warehouses, and railroad-owned hotels, introduced in Parliament by the Minister of Transport as a government-sponsored measure on Nov. 27, 1946. It had its second reading on Dec. 18, 1946, and received a vote of 362 for to 204 against. After the second reading the bill was sent to a standing Parliamentary committee for revision and re-drafting for its third and final reading.

The Transport Bill, with modifications with respect to the elimination upon the restrictions of motor vehicles used exclusively by traders in the carriage and delivery of their own goods was forced through its third and final reading in the House of Commons on May 5, 1947, with only three days allowed for debate. The vote at the third reading was 308 to 114. More than 200 opposition amendments and 90 Government amendments were guillotined in the process of jamming the bill through Commons. The bill is now before the House of Lords for final action. It was announced by the Minister of Transport that there would be an increase in transport rates and charges, and an increase in wages. The amounts of these increases have not been announced.

The Transport Bill is more easily understood if some of the significant history of the British railways between World War I and the close of World War II is sketched in as background. During the period 1914-1921, the period of World War I and for two years after the end of the war, the railways of Great Britain were operated under government direction, control and guarantee of earnings. In 1919 the Ministry of Transport was created, directed by the Minister of Transport, a Minister with portfolio in the government. The *White Paper* of the Minister of Transport published in 1920 proposed an amalgamation of the 120 British railways into four major railway systems, each serving a separate section of England, Wales and Scotland.

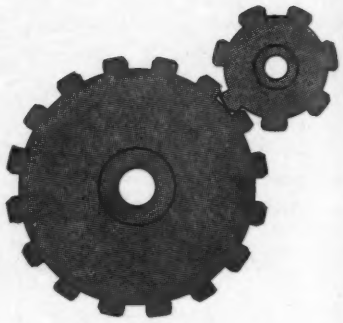
The Railways Act, 1921, provided for this amalgamation. The passenger lines in Metropolitan London and several jointly operated minor railways were excluded. Four major systems were created: 1. The London, Midland and Scottish Railway serving the Midlands region and parts of Scotland. 2. The London and Northeastern Railway serving the eastern counties of England and parts of Scotland. 3. The Great Western Railway serving the western counties of England and Wales.

(*Continued on Page* 78)

It Can Happen Here

Traffic men, carrier and industrial, throughout the United States should follow closely the progress of the Nationalization Bill now before Parliament. The overwhelming sentiment in the United States among industrial traffic managers and transportation companies is in favor of private ownership and operation of our transportation facilities under sound and sane government regulation, and opposed to ownership and operation of these facilities by the government. The way to insure this is to support sound and constructive legislation; encourage competent and progressive management; and promote cooperation between shippers, carriers and government. This can be done by knowing what is being done in other parts of the world and by taking action so that what is done here is in the best interests of the public; and not a scheme which is of advantage to one or several groups, but detrimental to the interests of other groups. Every individual and group should assert his or its reasonable self-interest, but due consideration should be given to the reasonable self-interests of others. Only in this way can constructive practices and policies be insured.—G. L. W.

MECHANIZED HANDLING MAY COST YOU LESS THAN YOU THINK



Because materials handling stories tend to feature the spectacular benefits that accrue from elaborate handling systems, the BIG savings which can result from SMALL installations and from individual devices are too often overlooked.

By MATTHEW W. POTTS

Materials Handling Consultant

THE benefits of mechanized handling of materials are manifold. Handling operations are simplified, the flow of raw materials, semi-finished and finished products in production and distribution is streamlined, worker fatigue and accidents are minimized, productivity per man hour is increased, and the possibility of damage to materials, parts and products is reduced. In short, materials handling makes for better housekeeping all along the line. Because of the spectacular benefits often accruing from mechanized handling, many of the published articles on the subject tend to feature the extensive, and sometimes expensive, installations responsible, with the result that the savings which can result from more moderate installations and from individual devices are sometimes overlooked.

Little savings too often are overlooked. Neglected economies, in the aggregate, can result in a needless expenditure of money and time because they multiply quickly. The writer recently was asked if all materials handling installations had to be large and expensive ones in order to save money.

He also was asked if there were any simple "rule-of-thumb" methods to determine possible savings through the use of improved materials handling equipment and methods.

In order to answer these questions, an analysis was made of certain materials handling operations in a wide range of industries. As a result of this analysis, certain fundamental principles were evolved. These simple principles applicable to both large and small plants, should be given consideration by management. Too often the obvious is overlooked by engineers and executives who frequently think in terms of specticular installations which require large investments and considerable plant changes.

Let us consider a few of these handling principles with a view to their application in specific handling problems. Remember that "materials handling is the lifting, shifting and placing of any material, regardless of its size, form or weight."[1] With this definition in mind, study the little handling operations as well as the big ones. Remember also that handling adds nothing whatever to the quality of a product, only to its cost.

Where two or more men are manually moving or handling materials possible savings can be affected by the use of mechanized equipment. If the operation is simply the transportation of the material from one place to another, various types of hand trucks can be used advantageously. Also power-operated trucks or tractor trailer trains or simple belt or gravity conveyors.

Where men are required to take two or more steps in the handling or transporting of materials, a rearrangement of the machinery or the process involved, in addition to the use of mechanical equipment of suitable type, will reduce the time and cost of the operation. Where men are lifting and handling articles weighing more than 100 lb., they should be provided with mechanical assistance. Labor aiding devices are invaluable in placing heavy castings into processing machines, in the loading and unloading of motor vehicles, etc. Handling into production machines can be facilitated by the installation of chain hoists, air hoists, electric hoists, and other lifting devices, such as cranes. Portable tiering machines as well as power-operated fork trucks and crane trucks also can simplify this type of operation. They also can tremendously expedite the loading and unloading motor vehicles. Loading delays can be eliminated and schedules maintained when motor carriers are equipped with elevating end-gates.

The use of obsolete methods and equipment is not only expensive but hazardous and should be eliminated as quickly as possible. Modern equipment in all cases should be installed and properly serviced and maintained, whether this equipment is a simple two-wheeled hand truck or an expensive device. Old equipment too frequently is used long after it has paid for itself simply because it operates. Since maintenance costs are not

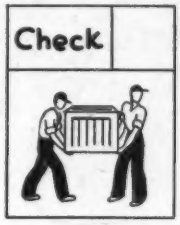
(*Continued on Page* 70)

[1] *Materials Handling Equipment*, A Modern Manual—Pitman Publishing Co.

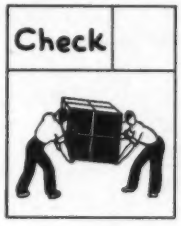
CHECK LIST FOR MATERIALS HANDLING

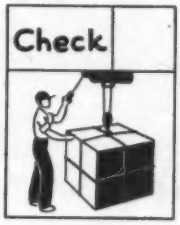
DO YOU DO IT.....✓.....This Way or This Way?

WHEN you have intraplant handling (manually a 2-man operation) of individual or small lots of raw materials, semi-finished, or finished products.
EQUIPMENT SUGGESTIONS: This operation can be simplified by the use of: Hand trucks . . . Power trucks . . . Tractor trailer trains . . . Simple belt or gravity conveyor . . .
METHODS SUGGESTIONS: This operation can be simplified by: A rearrangement of machinery . . . Change in location of operation . . . A change in process sequence to eliminate re-handling and re-routing . . .
REMEMBER: Small installations often mean BIG savings.

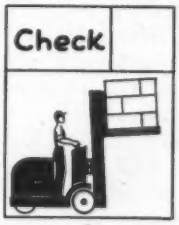


WHEN you have intraplant handling (manually a 2-man operation) of heavy objects weighing 100 lb., or more, such as castings into production, loading and unloading of motor trucks, etc.
EQUIPMENT SUGGESTIONS: This operation can be simplified by: Chain hoists . . . Air hoists . . . Electric hoists . . . Cranes . . . Portable tiering machines . . . Power operated fork trucks . . . Motor trucks with elevating end gates . . .
REMEMBER: Obsolete methods and equipment are not only expensive but dangerous and should be eliminated as quickly as possible.

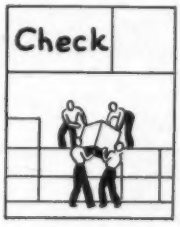


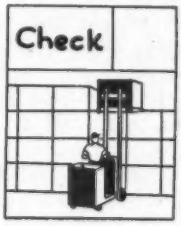


WHEN you have intraplant handling (manually a 2-man operation) as in Paragraph No. 2.
METHODS SUGGESTIONS: This operation can be simplified by: Better maintenance of existing equipment; A rearrangement of machinery; A change in location of operation; A change in processing sequence to eliminate re-handling and re-routing; Better location of material to be processed: Use of unit loads.
REMEMBER: The best materials handling equipment is the cheapest in the end. Inferior and old equipment is harder to handle, slower in operation and subject to breakdown.



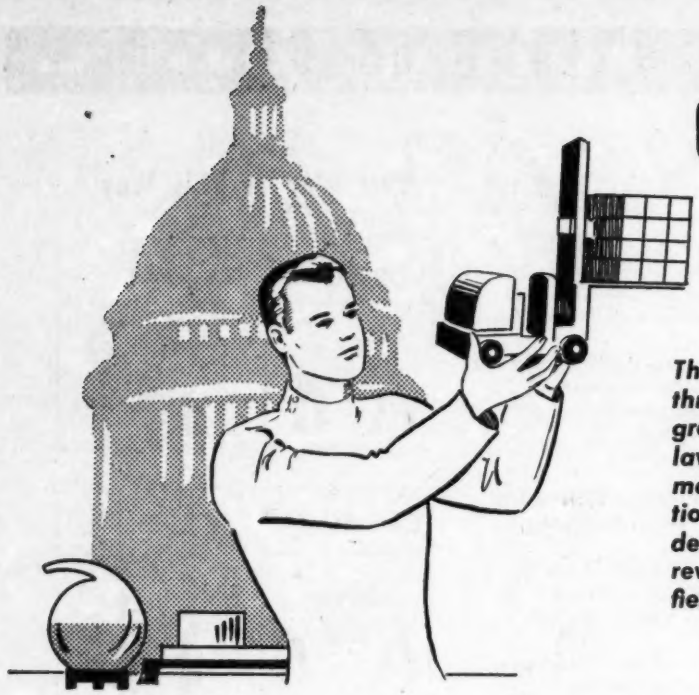
WHEN you have piling and stacking operations.
EQUIPMENT SUGGESTIONS: These and similar operations can be simplified by: pallets and fork trucks; Portable tiering machines; Overhead cranes.
METHODS SUGGESTIONS: Manual "step" stacking, while conserving space, is not justified as a regular operation and only occasionally as a temporary expedient.
REMEMBER: When material is to be manually stacked higher than a man's eye to utilize available cu. space, additional labor is required. A materials handling system, based on individual requirements is the answer.





WHEN you have machine, inspection and packing operations.
EQUIPMENT SUGGESTIONS: These operations can be simplified by the use of: Platform trucks . . . Lift trucks with skids . . . Fork trucks and pallets . . .
METHODS SUGGESTIONS: Handling raw materials, semi-finished and finished products in unit loads instead of individually from "delivery-to-operation" truck to floor to operation and from operation to floor to "take-away" truck . . . Retain material on delivery truck and handle individually to operation and from operation to transportation medium.

WHEN you have assembly operations.
EQUIPMENT SUGGESTIONS: Employment of materials handling consultant since conveyor and materials handling systems depend upon the product, the number of assembly stations, the physical layout of the plant and numerous other considerations.
METHODS SUGGESTIONS: Elimination of all back-hauls and overlapping operations.
REMEMBER: It is always easier to move unit being assembled to materials required in the next operation than materials to unit.



The Government's Research Program

The infiltration of totalitarian ideologies throughout the world, coupled with a growing, if reluctant, conviction among lawmakers that a "feed-the-world" policy may be the best defense, is focusing attention on the government's research and development program which is providing revolutionary technological advances in fields of military and peacetime logistics.

By ARNOLD KRUCKMAN
Washington Correspondent

THE grab by Russia of the Hungarian government and territory is a vivid illustration of the situation in Europe and Asia which has brought about legislation to back Greece and Turkey. This legislation has been provocative of much uneasiness and tension in Washington. There is a widespread feeling in the capital, on the hill as well as in the lowlands around the White House, that Congress may be compelled to come back in special session early in fall to make plans and provide funds to help many other European and Asiatic countries resist pressures that are growing more serious. The interval between June and the new year is regarded as a most critical period and one which will determine whether or not the world can settle down to a peaceful recovery, At this writing, early in June, those most familiar with world affairs, especially as they are affected by Russian activities, think the Communistic trend is far more important to our welfare than the possibilities of recession. You find many persons here of sound and sober habits of thought who regard the major part of the recession excitement as chiefly inspired by Fifth Columnists and not by facts.

It is sound business for the people who administer and plan the affairs of our commerce and industry to realize that the leaders in the capital, who should know what they are talking about, sincerely believe that no nation today would deliberately provoke a war. The danger, it is felt, lies in the condition which has caused the virtual seizure of the Hungarian Government, despite the wishes of the majority of the Hungarian people. By the time this article is published this condition may have brought on the actual envelopment, unwillingly, of other nations in Europe as well as in Asia. World wide restlessness is believed to constitute a tinder box of global dimensions. A spark may be struck by the unexpected resistance of some stubborn little government, and this may cause an explosion and the subsequent conflagration which figuratively might flare around the world.

Acute observers are watching another condition which may have a profound reaction on world affairs during the next six months. If European crops turn out as badly as now anticipated, and if there is a drought in the areas from which Russia must draw its food supplies, the people in large segments of the world will be even hungrier than they are today. This spells more disintegration, more anarchy, more lawlessness, and all the hopeless confusion that makes people turn to systems such as Communism. On the other hand, conditions may cause Russia to be more cautious about striking the spark that may explode into something the end of which no one may foresee. There is no business more important to the world today than those food ships which are being loaded at American ports, especially in the United States and Canada, and which are being rushed across the oceans to the hungry and desperate peoples of the world. The source of these cargoes, and the speed with which they are shipped, may have a deep effect upon the future history of the world.

Good crops in Russia are regarded as the Soviets' coin with which they expect to communize Europe this fall. If Russian crops are not good, the Soviets may have to turn to us for help. Should Congress come back in special session in fall, it is expected the President will be in a good position to ask for more, and far greater, credits to help Italy, France, Britain, Iran, Irak, some Scandinavian countries, and var-

(*Continued on Page* 92)

STREAMLINED HANDLING OF OIL DRUMS

A highly coordinated series of mechanized operations has made the handling of lube oil drums, from the receipt of empties to the storage and shipping of filled containers, a streamlined flow with attendant time and cost savings.

By A. D. KIRK

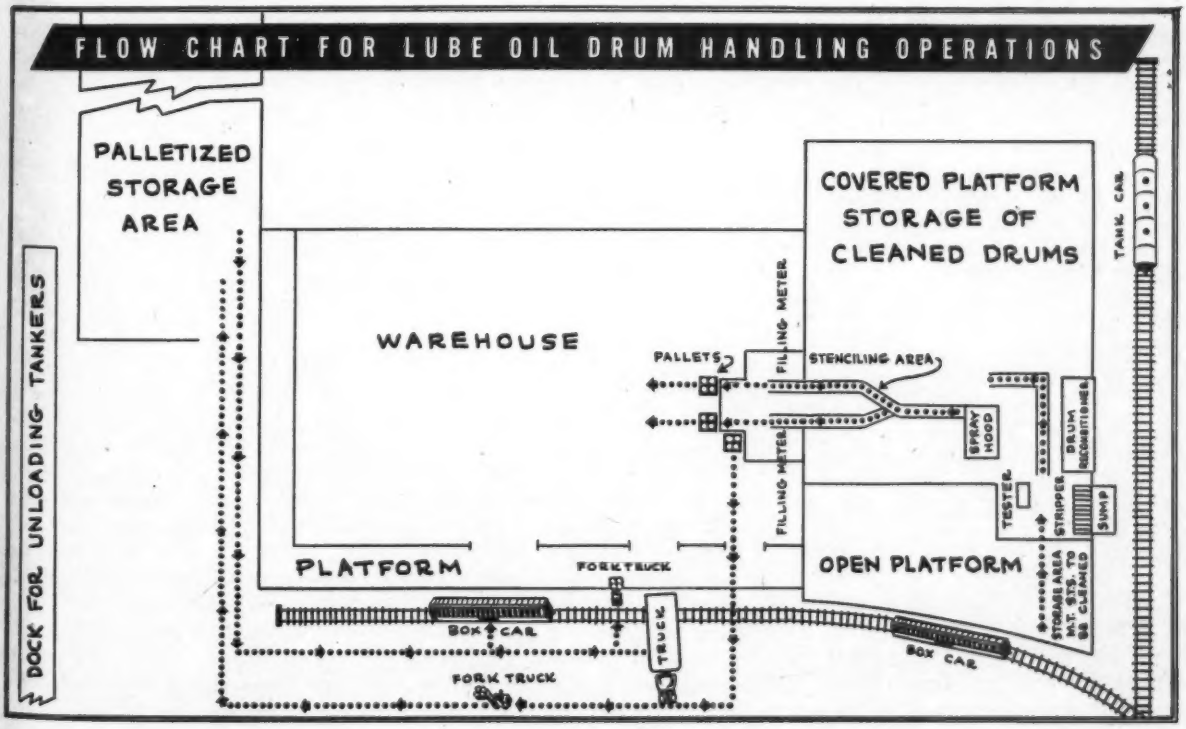
Plant Supervisor
Tide Water Associated Oil Co.
Lube Oil Terminal
San Pedro, Cal.

A COORDINATED series of operations, with the accent on mechanical handling, has vastly improved the methods of handling, filling, and storing lube oil drums at the Lube Oil Terminal, San Pedro, Cal. The The complete operation, from the receipt of empty drums to the storage and shipping of filled containers, presents a streamlined flow which is designed to save time and cut costs. Mechanical handling devices are carefully integrated in each step of the process. Drums are received by truck or rail and stored on an open dock. They are first stripped inside and out by pumping the drums with waste hot water and cleaning solution from the drum reconditioner sump (Fig. 1). Next, they are rinsed with fresh water and steam, and tested for leakage. A 24-in. Lamson roller

conveyor transports them to a two-station Portco automatic drum reconditioner. The operator places the drums, one at a time, inside and inserts a combination inside cleaner and siphon. Then, arranging the drum in position on a turntable, the operator closes the door which automatically lights the signal light and instantly starts the automatic timer. The timing mechanism regulates the washing, rinsing and drying at a thermostatically controlled temperature of 170 deg. F. At the end of a five-minute period, the signal light goes out. The operator removes the clean drum and inserts another drum to be cleaned.

The cleaned drum again is placed on the conveyor, and inspected with a fluorescent inspection light. The light is installed directly above the conveyor and has an automatic take-up reel. This type of inspection light is used throughout the operation to insure a clean container before filling. Plugs with new gaskets are inserted next.

The drum moves on the con-



veyor to a DeVilbiss waterwash spray hood where the body and head colors are sprayed on. This unit was designed to take both 30 and 55-gal. drums without adjustment of the rotator. A self-contained water tank circulates 200 gals. per minute of chemically treated water. The paint overspray is pulled into a water curtain by a 24-in. fan located in the exhaust stack. On completion of this step, the drum is up-ended onto a roller conveyor by a specially designed device on the rotator. It proceeds to the stenciller, who with a manually operated conveyor switch, directs it to either the right or left conveyor.

The stencilling is done between these two conveyors (Fig. 2) with a spray gun mounted overhead on an automatic take-up reel. By this arrangement, one man can stencil drums on both conveyors with a minimum of movement. Part of the clean drums are stored adjacent to the stencilling area. These supplement the drums from the cleaning unit. Before leaving the stencilling area, another inspection is made to insure a clean drum before filling.

Roller conveyors continue the drums on their way to the filling point (Fig. 3). Filling meters, 1 to 100 gal. automatic delivery 2-in. Bowser temperature compensator type, have combination air release and strainer mounted on portable carriages. These meters can be thoroughly drained and flushed, thereby eliminating contamination when changing from one grade of oil to another. A hose with quick connectors on the inlet side of the meters allows the use of two meters for all commodities filled. The drums, still on conveyors, are filled over grated catch basins, which drain off by pipe to the sump. All pipe lines are run horizontally overhead. Drip pans, which also lead to the sump, are arranged below the vertical connectors to insure a clean operation.

The drum filling area is elevated by a concrete slab 5½ in. above floor level. This elevation facilitates placing the drums on pallets for storage. However, drums filled for immediate shipment are

(*Continued on Page* 82)

Figure 1

These views show the steps in the streamlined handling of oil drums.

Fig. 1. Drums, received by truck or rail are cleaned with hot water plus cleaning solution from drum reconditioner pump.

Fig. 2. Stencilling. This operation is accomplished by means of a spray gun mounted on an overhead "take-up" reel.

Fig. 3. Roller conveyors bring the drums to the filling station. After filling the drums are palletized for storage.

Fig. 4. Palletized drums are moved by a high lift fork truck into storage. Each of the pallets holds four lube oil drums.

Fig. 5. Drums, cleaned, reconditioned and refilled, in warehouse until ready for shipment. Note ceiling-high stacking.

Fig. 6. Palletized loads of lube oil drums (four drums to the pallet) are easily handled by the high lift fork truck.

Fig. 7. The blending plant. Various blended and compounded oils are provided with separate manifolds, lines and pumps.

Figure 2

Figure 3

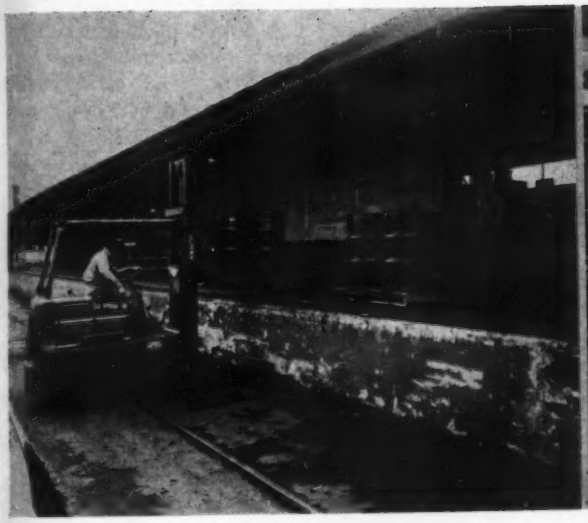


Figure 4

Figure 5

Figure 6

Figure 7

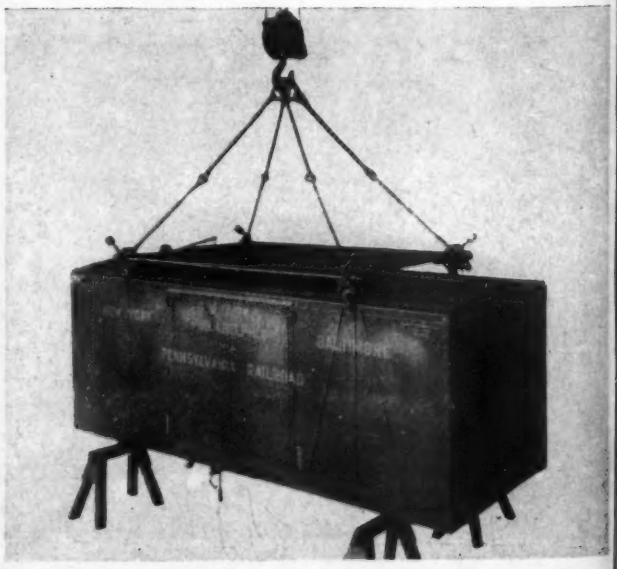
TRANSPORTATION . . . Its World-Wide Problems

Interchangeable lightweight containers would increase the carriers' earnings without recourse to higher freight rates.

THE venerable box car which seldom is loaded to more than half its rated capacity averages approximately 10,000 miles a year in travel. A 24-ft. semi-trailer, with but half the capacity of the box car, generally operates fully loaded and averages about 25,000 miles. Stripped of its running gear, the semi-trailer makes a unit load container ideally adapted to transportation by air, rail, highway or water (both barge and ship) and is capable of reducing distribution costs and tremendously simplifying the shipping problems of foreign and domestic commerce. Two such containers, each of about 1,300 cu. ft. capacity, when in place on a 50-ft. flat car make a unit of about the same average cubic capacity as the average box car. These Keystone containers (so-called because they might well be the keystone of our transportation bridge between consignor and consignee) are designed to handle lumber, refrigerated products, bulk commodities and general cargo. If used in connection with combined rail and highway transportation under a joint agreement between the rail and motor carriers, as has been suggested by the United States Chamber of Commerce, the economies resulting would be enormous. These economies would be reflected in an increase in earning power for both these modes of transportation and would obviate the necessity of recourse to higher rates.

The standard 24-ft. semi-trailer weighs 9,200 lb. The running gear accounts for 1,200 lb., but even when this is removed we have a container with the excessive weight of four tons. The weight of the Keystone container, however, can be reduced to 2,500 lb. through the use of aluminum in its construction. When the New American Clipper, described in the June issue of DISTRIBUTION AGE is injected into the picture, any increase in the first cost of the container will be justified since the use of aluminum and magnesium alloys in its construction will make 2,000 extra tons of paying cargo possible. Or, with the same capacity as that of the standard container, its draft can be reduced to 18½ ft., thus reducing too the wear and tear on railroad equip-

Two Keystone containers, each of about 1,300 cu. ft. capacity, would make an interchangeable shipping unit of the same cubic capacity as the average box car.



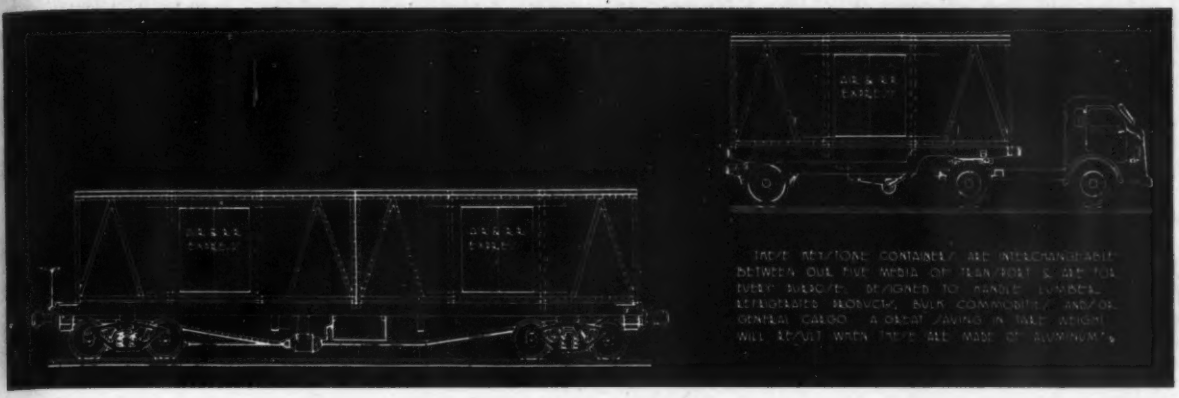
Farm Land Values

President Truman has called to our attention the danger of rising values in farm lands, pointing out that the slump which occurred after the first World War might be repeated. Instead, with better psychology, might he not have asked what the government could do to keep these values up? The answer, of course, is cheaper transportation, because the nearer the farm to the city consuming center, the greater the value of the land.

Let us take a specific case: If you ship a bushel of wheat from the corn bin on a Montana farm in a Keystone container of the type described in this article by motor carrier, flat car, or barge to Sioux City, Ia., thence to Liverpool direct by water, you could save at least 33½c. in transportation charges. If the farm produces 30 bushels of wheat to the acre, is it not true, then, that you have earnings of 10 dollars more per acre?

You may ask to what extent does this add to the value of the land; or perhaps, what additional and less accessible acreage does this extra 10 dollars bring into production?

Harold Stassen rightly and with logical reasoning wants us to give away 10 percent of our food production and, in this manner, make the world so free from want that a permanent peace will be assured. I am sure that we can find this surplus 10 percent of food, not now in existence, on the marginal lands of the Mississippi Valley. This kind of planning will cause no suffering for lack of food here and certainly will create no disturbance to our economy—H. D. C.



By HENRY D. CLEVELAND

Chairman of the Board, John S. Emery & Co., Inc.

ment and rails now caused by excessive container weight.

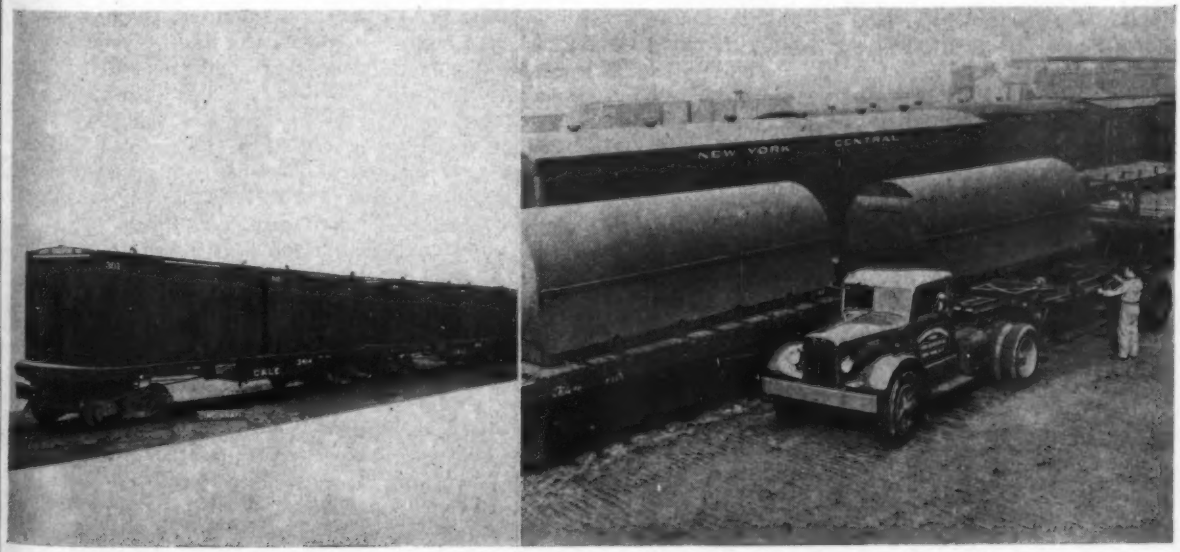
In considering these savings, let us discuss in a general way the New American Clipper. Here we have a ship designed for operation in connection with rail and highway shipments. This vessel has a minimum capacity of 392 Keystone containers and a speed of 20 miles per hour. In order to handle an equivalent volume of traffic on land, three 60-car trains made up of 50-ft. flats would be required. In addition, terminal tracks would be required to accommodate the 3,400 ft. train with a loading and unloading roadway on the dock side and storage space for the containers on the other. In this way much switching could be avoided, vessel departures speeded and maximum earning power and lowest operating costs realized.

The L. D. Smith Shipbuilding Co. has developed a container known as the Safeway. The size of this container is 6 ft. 9 in. high by 7 ft. 9 in. long. The dimensions were based on the capacity of the average ship's lifting gear. These containers have collapsible legs that fit into recesses at each corner for better stowage and stacking on ship and shore. Savings in marine insurance, handling and damage claims tend to offset the rental charge of 30c. per day. The modern lifting gear used on the New American Clipper is of the same type as used to speed up our wartime shipbuilding program and tends to nullify to some degree the value of this stacking feature in those cases where modernized terminals with ample space are provided. Robert R. Young, Chairman of the Chesapeake and Ohio Railroad, in extensive newspaper advertising concerned mainly with passenger traffic brings out the point that even bankrupt railroads can get modern equipment of every kind because the interest rates for equipment trust certificates are now at an all-time low.

(*Continued on Page* 67)

Designed for lumber, refrigerated products, bulk commodities and general cargo, the container is interchangeable between rail, water and highway carriers.

The B. F. Fitch container has been used with outstanding success for the transportation of milk between New York and Albany. A carrier transfer is being made.



FREIGHT FORWARDERS and the CAB

PART 2.

Air freight forwarding, still in its infancy, requires a minimum of CAB regulation if it is to develop efficient services for shippers.

By JOHN H. FREDERICK

Air Cargo Consultant

NO ONE questions the right of the Civil Aeronautics Board to regulate freight forwarding by air. All the power needed is granted under the Civil Aeronautics Act of 1938 since forwarders come under the "indirect air carrier" definition as set forth therein. The question, however, is just how much regulation is needed at this time and of what sort. Air freight forwarding is in its infancy and it will need flexibility of operation in order to develop efficient service for shippers. It would appear, therefore, that a minimum of regulation is now called for. Later regulation can be made more complete and strict if such steps seem desirable after we have had more experience.

The wisest thing for the CAB to do now would be to issue an exemption order to any freight forwarder who can show that he is fit, willing, and able to perform air freight forwarding. This would permit such an organization to engage in forwarding air freight in a general manner without having to prove that the services between specific points or over particular routes or in connection with particular commodities were required by the public convenience and necessity as is the case under existing law. With such orders in effect there will be no limit to the number who may engage in air freight forwarder service. This might be a good thing since one really does not know what the business may eventually amount to.

An exemption order of the CAB, however, should contain conditions making air freight forwarders subject to the provisions of the Civil Aeronautics Act as follows:

Sec. 402. This section deals with the necessity for foreign air carriers to obtain permits from the Board and applies with as much force to indirect air carriers (forwarders), as it does to direct carriers (airlines). It would appear that the interests of foreign freight forwarding would be best served if the Board adopts the same attitude toward the number of foreign air forwarders which may obtain permits as has been suggested for domestic freight forwarders by air.

Sec. 403. This deals with the necessity for air carriers to file schedules of rates and charges with the Board, to post them and keep them open to public inspection and to adhere to them. In no other way will the shipping public be able to conveniently discover the exact amount of charges they may be expected to pay for freight forwarder services. Publication of rates and charges has always acted as an effective check against unjust discrimination, undue or unreasonable preferences or advantages and secret rebates.

Sec. 404. This section outlaws

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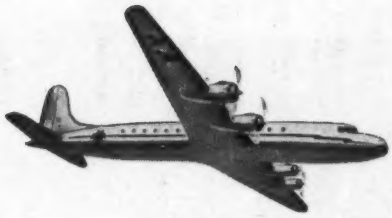

THE

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ADOPTS MOST MODERN DISTRIBUTION METHOD WITH

AMERICAN AIRLINES Airfreight

LEADER in the field of quality dress patterns for more than 85 years, and today serving the women of America through more than 1,300 retail stores, The Butterick Company has adopted the regular use of American Airlines Airfreight as a basic shipping procedure. Merchandise flows more swiftly and smoothly from the great Butterick plant in New York. New, popular designs are delivered when *wanted*. Stocks are always maintained at desirable levels for better service to retail stores.

Many other alert, modern-minded shippers are turning to Airfreight for time-saving, dependable stock deliveries. Better to handle this increased demand, American now provides 4-engine airfreighters, designed exclusively for cargo service, between major cities on its routes. Whether you ship by pounds or planeloads, there is an American Airlines service to fit your needs. For details call your nearest American Airlines office or write to American Airlines, Inc., Cargo Division, 100 East 42nd Street, New York 17, N. Y.

BLUE PRINTS FOR ECONOMY

The National Paper Trade Assn. studies mechanized handling in paper warehouses and publishes recommendations.

By G. W. LEATHERS

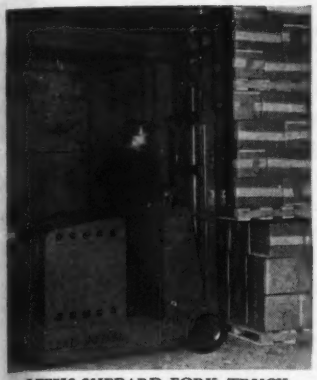
TODAY the talk is of lowering prices and improving quality. Customers who for nearly six years have taken what they could find at a price over which they had no control, will return to the driver's seat. Many companies have taken on a little fat "around the middle" and must now get back in trim for the competitive days ahead. Good sales technique must be developed; the size and quality of inventories must be closely watched; and operating expenses must be cut. To meet this problem The National Paper Trade Assn. created a committee on operating efficiency, consisting of members of the trade and a member of the association staff to select programs calculated to help merchants reduce their cost of operation. The committee first recommended the addition of a full-time industrial engineer to the staff and then selected materials handling for the initial study. The result, "Blueprints For Economy" (project No. 1, Materials Handling), was mailed to the entire membership in April 1947. The study was received with considerable approval as indicated by the response from the members. A good many requests have also been received for individual consultative assistance by the industrial engineer.

The acquisition of a competent engineer is essential to the success of such a program and the association acquired the services of E. Jay Huss. Of paramount importance, however, is the selection of a committee on operating efficiency which must comprise at least the following elements: 1. Association mindedness, or the willingness to devote one's own time for the betterment of the trade, consisting of competitors. 2. Recognition in the trade, so that the findings of the committee will be relied upon by the general membership. 3. Progressiveness, which is indicated by the member's activity within his own company. 4. Representativeness, which is necessary to insure that the needs of all the members are considered.

Since the Association membership consists of large and small houses, selling both fine and coarse papers in city and country, from an almost endless variety of warehouses, it was obvious at the outset that no one tailor-made solution to this problem would benefit more than a small percentage of the total membership. The first step therefore was to call on some one hundred or so members to establish facts concerning the typical paper merchant's warehouse and the operating problems therein. Calls upon a large number of members were necessary in order to determine typical operating problems and the typical limitations to be set in their solution.

The next step was to acquire information as to the cost, maintenance, and operation of equipment, then being produced, which would be available for the solution of these problems. Obviously, it was necessary to indicate where

(*Continued on Page* 94)



LEWIS-SHEPARD FORK TRUCK

DEPENDABLE

POWER

EXIDE-IRONCLAD POWER
AND BATTERY ELECTRIC TRUCKS

Keep materials moving steadily, safely, at minimum cost . . . .

You can make substantial savings in materials handling costs by using the modern, efficient method employed by so many others throughout your industry. They have delegated their loading, unloading, lifting, hauling, placing and stacking to the time-and-cost-cutting team—battery electric trucks and Exide-Ironclad Batteries.

Exide-Ironclad Batteries have the high power ability, the high maintained voltage and the high capacity that materials handling requires. You can always count on Exide-Ironclad Batteries for dependability, long-life and ease of maintenance.

Write us for a FREE copy of Exide-Ironclad Topics which contains "Case Studies" of materials handling problems. It tells how to cut handling costs up to 50% . . . covers latest developments in handling materials from receiving to shipping.

THE ELECTRIC STORAGE BATTERY COMPANY
Philadelphia 32
Exide Batteries of Canada, Limited, Toronto

LEWIS-SHEPARD POWER JACKLIFT

Modern Warehouse Design

In the wholesale drug and other industries where an enormous variety of differently sized and shaped products must be handled efficiently, modern warehouse design must start with the materials handling system.

By WILLIAM R. MACKENZIE

MODERN warehouse design entails more than choosing a good site and erecting a large, attractive building. It involves serious consideration of the equipment and techniques to be used in the handling of goods. In the wholesale drug industry, for example, where the variety of products to be handled is enormous, materials handling comes first and the warehouse second. A large wholesale drug company carries about 30,000 items which, when broken down by sizes, number approximately 90,000. The difficulty of handling is multiplied by the elements of shape and size. Some of these items are minute, such as hypodermic needles, 1/8-oz. tubes of opthalmic ointment, leads for mechanical pencils, etc. Some items are packaged in gross quantities, such as

Assistant to the General Manager Brunswig Drug Co.

cases of toilet and cleansing tissues, and cotton wadding. Many other items are heavy liquids and breakable; others are light and indestructible.

The handling procedure in the new two million dollar, two-story Brunswig warehouse, Los Angeles, starts with the receipt of merchandise from trucks and rail cars. The receiving platform is at truck body height and accommodates six trucks at one time. Adjacent to, and at a right angle to this platform, is the railroad siding which parallels one side of the building. The siding is at the regulation distance from the face of the building and handles two cars. The receiving platform at the old plant was at sidewalk height and was shared by the shipping department so that some trucks were loading while others were unloading. This, of course, resulted in confusion. The railroad spur served a secondary building about seven blocks away and all carloads of merchandise had to be trucked from this spur to the warehouse proper.

At the new plant, a rail car load, averaging about 1,000 cases of assorted items and sizes, can be completely unloaded and the merchandise stored away in the warehouse in 12 man hours. In the old location, the same operation

(*Continued on Page* 84)

Modern equipment simplifies handling of wholesale drugs.

Streamlined drug handling has cut distribution costs.

PULL DOWN YOUR MATERIALS HANDLING COSTS with a HYSTER "20"

Moves and stacks anything up to 2000 lbs. Pulls down handling costs as much as 20% to 79% (actual case histories). Six other Hyster models, 4000 to 30,000 pound capacities, all gasoline powered, all on pneumatic tires.

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1840 North Adams St., Peoria 1, Illinois
1040 Meyers Street, Danville, Illinois

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Northern Commercial Co.
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Rapids Handling Equipment Co.
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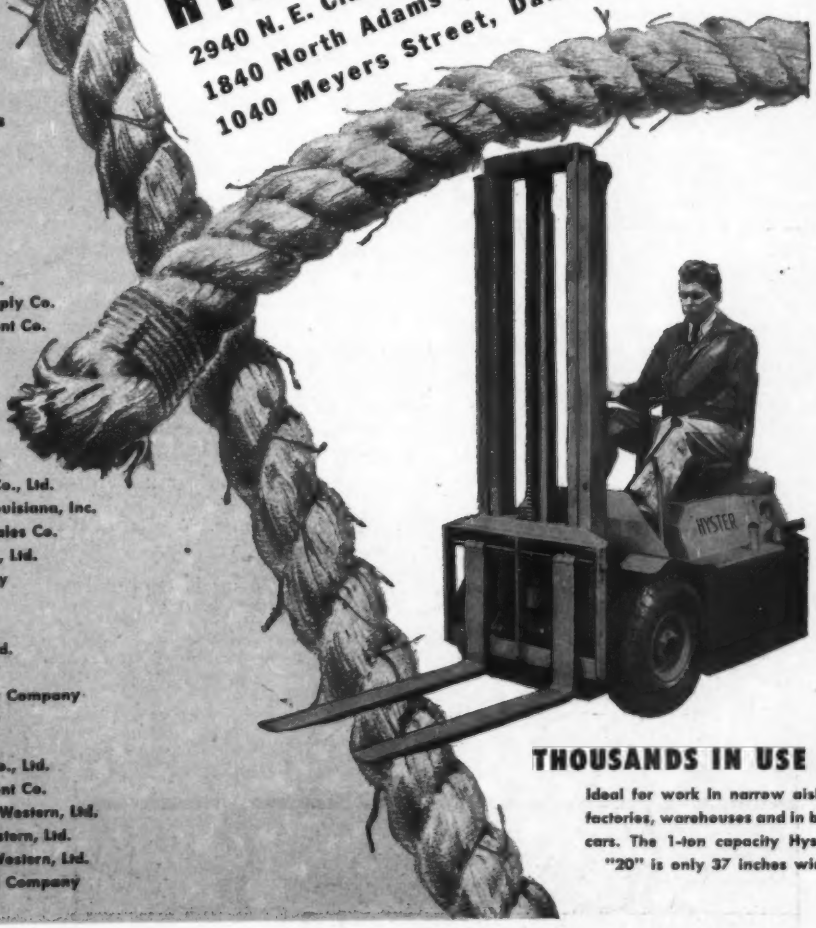
A. R. Williams Machy. Western, Ltd.
CHICAGO, ILL.—Hyster Company
CINCINNATI, O.—Oral T. Carter & Associates
CLEVELAND, O.—Morrison Company
DALLAS, TEX.—C. H. Collier Company
DENVER, COLO.—Paul Fitzgerald
DETROIT, MICH.—Bentley & Hyde
HALIFAX, NOVA SCOTIA
A. R. Williams Machy. Co., Ltd.
HONOLULU, T. H.—Electric Steel Foundry Co.
INDIANAPOLIS, IND.—Central Rubber & Supply Co.
JACKSONVILLE, FLA.—L. S. Teague Equipment Co.
KANSAS CITY, MO.
Industrial Power Equipment Co.
LOS ANGELES, CALIF.—Hyster Company
LOUISVILLE, KY.—Embry Brothers, Inc.
MILWAUKEE, WIS.—Hyster Company
MINNEAPOLIS, MINN.—W. S. Nott Company
MONTREAL, P. Q.—A. R. Williams Machy. Co., Ltd.
NEW ORLEANS, LA.—Hyster Company of Louisiana, Inc.
NEW ROCHELLE, N. Y.—Eastern Industrial Sales Co.
OTTAWA, ONT.—A. R. Williams Machy. Co., Ltd.
PHOENIX, ARIZ.—Equipment Sales Company
PITTSBURGH, PA.—Equipco Sales Company
PORTLAND, ORE.—Hyster Sales Company
ST. JOHNS, N. F.—City Service Company, Ltd.
ST. LOUIS, MO.—Wharton L. Peters
SALT LAKE CITY, UTAH—Arnold Machinery Company
SAN FRANCISCO, CALIF.—Hyster Company
SEATTLE, WASH.—Hyster Company
TORONTO, ONT.—A. R. Williams Machy. Co., Ltd.
TULSA, OKLA.—Marshall Supply & Equipment Co.
VANCOUVER, B.C.—A. R. Williams Machy. Western, Ltd.
VICTORIA, B.C.—A. R. Williams Machy. Western, Ltd.
WINNIPEG, MAN.—A. R. Williams Machy. Western, Ltd.
YUKON TERRITORY—Northern Commercial Company



THOUSANDS IN USE

Ideal for work in narrow aisled factories, warehouses and in box cars. The 1-ton capacity Hyster "20" is only 37 inches wide.

Something NEW in Flooring

Because of its resistance to freight-holding nails, this new type steel flooring for rail and highway carriers is expected to reduce their maintenance cost and make more equipment available.

Lathe being blocked in place on nailable steel floor. Nailing grooves have four times the holding force of wood, insuring greater protection to this type load in transit.

A NEW nailable steel flooring designed to slash maintenance costs for railway freight cars, trucks, and trailers and relieve the shortage of such hauling equipment has been developed by the Great Lakes Steel Corp., a unit of National Steel Corp. The new floor consists of steel channels between which ordinary nails may be driven. Nails driven into grooves formed by parallel flanges of curved steel are deformed and held more securely than when driven into wood. Thus the equipment can handle freight customarily secured by blocks nailed in place to wooden floors. Because of the large volume of freight which must be blocked in place, a high percentage of freight car floors must be nailable, a feature heretofore obtainable only in wood.

The 8-in. wide channels are formed from N-A-X High Tensile, a low-alloy high-strength steel noted for resistance to abrasion and corrosion. The channels are laid across the width of the car or truck and welded to the underframes, with a space left between the channels to provide the nailing groove. The grooves are filled with a self-sealing composition which prevents loss of bulk freight, such as sand and grain. Hauling equipment having such floors thus can handle rough heavy freight, finished products, or bulk materials. This versatility is equivalent to adding new rolling stock because it eliminates many time-consuming switching and assembling operations to supply cars with floors suitable for the particular commodity involved. Open top cars are at present maintained in two types with either steel or wood floors, whereas all box cars have wood floors. The new steel flooring will make a car usable for all types of lading throughout its life as nailing will not damage the floor in any way.

The new flooring is expected to last the life of the car, estimated at from 20 to 25 years, and stay in suitable condition for all types of freight throughout its life. The greater structural strength of the steel channels offers opportunity to lessen the weight of underframes in new car designs, although they may be installed as replacements in existing cars with little or no change required in the underframe construction. Other advantages in using the nailable steel floor include: increased strength and resistance to impact; freedom from splintering and obstructions contributing to damage of goods in transit; non-absorbency of liquids; and ease of cleaning and unloading. Offering of the new material to the transportation industry is said to follow more than a year's satisfactory tests in open-top railroad cars and several months of similar tests in box car and highway trailer service. The product will be handled by a newly-created Steel Floor Division of the corporation under the direction of Harry D. Fenske, the firm's director of transportation.

Cross section of nailable steel floor. Nailing grooves are filled with plastic to prevent loss of fine freight carried in bulk.

YOU, TOO, CAN SAVE MONEY

with a truck like this

Here's a *"Job-Rated"* truck . . . a truck that FITS the hauling job for which it was built!

It stands to reason that a truck that fits its owner's operating conditions will give better performance, better service to customers, and operate at lower cost.

You, too, can buy a truck that will fit *your* job . . . save *you* money!

You can get a *"Job-Rated"* truck powered with exactly the right one of 7 engines—plus the *right* gear ratio—to provide the pulling power you need, with the economy you want.

Such a truck will be built with exactly the right clutch, transmission, rear axle—the right units throughout . . . for "top" performance with your loads over your roads.

You can be so sure of getting a money-saving, long-lasting truck like this, because Dodge builds 175 different *"Job-Rated"* chassis models.

To make sure that your next truck is a dependable, economical *"Job-Rated"* truck, see your Dodge dealer . . . because *only* Dodge builds *"Job-Rated"* trucks.

★ ★ ★

Your Dodge dealer is interested in your continued satisfaction: *First*, by selling you a truck that fits your job; *Second*, by giving you prompt, dependable Dodge truck service; *Third*, by providing you with factory-engineered truck parts that are identical with original Dodge *"Job-Rated"* truck parts.

DODGE

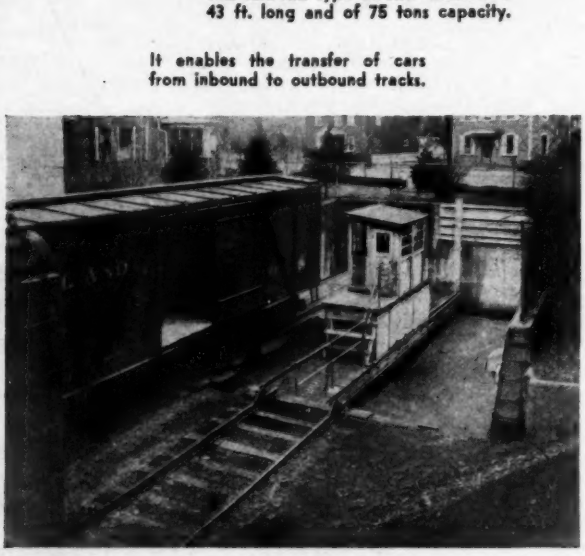
ONLY DODGE BUILDS *"Job-Rated"* TRUCKS

Fit the Job . . . Last Longer !

Handling Boosts Flour Output

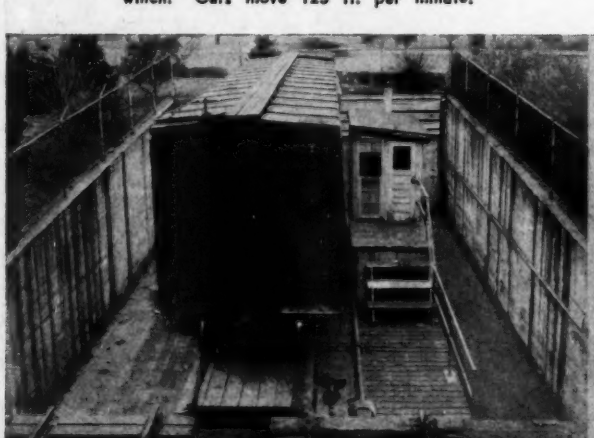
This railroad type electric transfer is 43 ft. long and of 75 tons capacity.

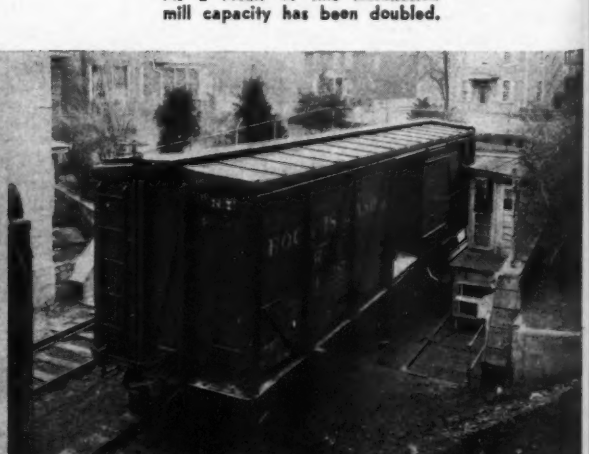
It enables the transfer of cars from inbound to outbound tracks.



The installation includes a power winch. Cars move 125 ft. per minute.

Prior to the installation of a railroad type electric transfer table at the Highspire (Pa.) Flour Mills Div. of the Wheatena Corp., the company was restricted in the number of flour cars it could load and unload in a certain time. Production was curtailed below the real capacity of the mill. Since the company's inbound and outbound private siding tracks ran parallel and close together for about 250 ft., it solved the problem by arranging for the transfer of cars from inbound to outbound tracks through the medium of a transfer table of the type illustrated. This table, recommended by engineers of the Whiting Corp., includes a power winch to move cars at about 125 ft. per minute. The table itself moves at about 150 ft. per minute. It is 43 ft. long, has a capacity of 75 tons, and does not require a deep pit. The mill has been able to double its capacity since the installation of this Whiting electric transfer table.—HENRY G. ELWELL, Traffic Consultant.





As a result of this installation mill capacity has been doubled.

Atlas Storage Tells Us How MODERN HANDLING METHODS

- *More than doubled profits*
- *Increased storage capacity*
- *Boosted output per man hour*
- *Improved workers' morale*
- *Simplified inventory taking*
- *Helped orderly warehousing*

SUCCESS in the warehousing business is measured not in size of buildings or areas available for storage, but in the use made of them. Old fashioned practices and methods penalize the customer who must pay for inefficiency while, on the other hand, modern storing and handling methods give him maximum good services at attractively low cost. Early in 1943, Atlas Storage, Milwaukee, determined to examine its methods and its equipment with a cold and critical eye. The company's objective was to see how it might increase the efficiency of its operation and so improve its services to customers that they would look upon these services as indispensable parts of their business. The firm's self-examination revealed some excellent assets. Atlas Storage is a division of P & V-Atlas Industrial Center, Inc., one of the largest industrial community operations of its kind in the Northwest. The company owns a number of warehouse buildings centrally and strategically located in Milwaukee's industrial areas. These buildings provide 1,500,000 sq. ft. of working floor space. The company has had a broad experience as warehousemen for a wide range of products and commodities (Fig. 1) as well as a long and commendable record of profitable operation. But the management looked upon past achievements merely as firm ground underfoot for fresh advances and realized that existing facilities could be utilized for greater advantage to the firm's customers and to the firm itself. Studies indicated that maximum advantages could be obtained through mechanizing handling operations by means of powered industrial trucks. At the time these devices were not available because the entire output was being absorbed by our armed forces. Competent materials handling engineers representing both equipment manufacturers and engineering firms were consulted and plans were developed for installing the fork truck-pallet method of handling as soon as such equipment was procurable.

The new plan was inaugurated late in 1944 with the purchase of the first mechanical unit, a Clark gas-powered Carloader fork truck of 3500 lb. capacity and 108-in. finger lifting height. It soon was followed by additional fork trucks and other handling equipment.

The company's present warehouse was originally an inside truck terminal. This was the best warehousing space available and it was decided to use it for storage. The truck terminal operation therefore was moved outside of the building. It also was decided to use the basement for storage but this decision presented the problem of moving material between two floor levels. This problem was solved by the use of a ramp in preference to an elevator (Fig. 2) and its grade is easily negotiated by fork trucks.

At the start of the operation the military-size pallet, 48 x 48" was selected. Other sizes have since been added. Approximately 4000 pallets are used. It also was necessary to procure several pallet hand trucks, various lengths of roller conveyor, storage racks for miscellaneous and small lot items (Fig. 3) and a few specialized pieces of equipment.

The change in operations did not come about overnight but required several months of careful planning and hard work. It was realized that no method will produce satisfactory results unless it is implemented by careful planning, hard work and proper supervision. In handling, the company either palletizes into unit loads or places the material in such fashion that practically every bit of merchandise can be handled and tiered with fork truck equipment, thus making available almost three times the existing square footage of floor space. (Fig. 4).

A large amount of news print is handled in rolls and flat reams and this type of material has successfully been palletized. Celotex wallboard also has been placed on pallets and is very easily handled in this form. It was found necessary to develop a few special fork truck attachments to enable them to handle long or odd-sized bundles. A small crane attachment readily detachable from the truck is used to great advantage in handling long boxes of copper (Fig. 5). By a simple change in gadgets used in connection with the crane attachment, long rolls of carpeting or linoleum can be handled easily. An ice-tong clamp that grips the roll firmly in the center enables the truck to carry it easily to and from storage (Fig.

Fig. 1. Atlas Storage handled a wide range of products and commodities as this view shows.

Fig. 2. A ramp solved the problem of moving goods rapidly from one floor level to another.

Fig. 3. Storage racks are used for the accommodation of miscellaneous items and small lots.

Fig. 4. Unit loads are used where possible. All goods can be handled and tiered by fork trucks.

6). Crated linoleum, normally a severe headache to the public warehouseman, was easily conquered by using a length of steel cable fastened to the top of the load safety rack on the fork truck and with a hook on the other end. The operator inserts the forks under one end of the crate and hooks the cable into the far end. Then by lifting and tilting the uprights, the long crate of linoleum is easily picked up and removed from the car (Fig. 7).

For easier, faster handling of rolls of carpeting not crated, palletizing was found desirable; but how to make it a square unit load to permit tiering was a perplexing problem until the idea of using dunnage strips with dowel pegs through their ends was hit upon. This simple device keeps the carpeting from rolling off the pallet and makes a square unit load a reality. Handling of rolled carpeting no longer presents any problem (Fig. 8).

The company tries, as far as possible, to load all trucks with unit loads. Where it is not immediately possible for a piece of materials handling equipment to go directly from the dock onto the bed of the truck because of differences in height, the unit load is

Fig. 5. A small crane attachment is used to great advantage in handling long boxes of copper.

Fig. 6. Long rolls are handled by means of a tong clam for movement into and out of storage.

Fig. 7. Note how easily these long, awkward boxes of linoleum yield to a special attachment.

Fig. 8. Dunnage strips with dowel pegs make possible unit loads of uncrated carpeting rolls.

deposited on the truck and then maneuvered into position with a pallet hand truck. In some instances sections of roller conveyor are used to accomplish the same purpose.

What this change to modern materials handling methods has accomplished may be briefly summarized as follows: 60,000 sq. ft. of floor space now produce the same gross storage income previously yielded by 140,000 sq. ft. In addition, the following advantages have accrued:

1. More orderly warehousing: there is very little confusion or question as to where certain items are stored.
2. Taking inventory has been made a simple matter because unit loads, not single items are counted whenever complete unit loads are possible.
3. Unskilled labor has become skilled. The truck and a driver perform many times the work a gang of four or five men working with their hands could formerly accomplish.
4. The in-and-out handling of merchandise, which means better service to customers has been speeded up. Less time now

(*Continued on Page* 61)

unjust discriminations and undue or unreasonable preference or advantage. The only basis on which a freight forwarder can give an undue preference to a preferred shipper is by unduly discriminating against some other shipper and this, of course, should be prohibited.

Sec. 407. This requires the submission to the Board of such accounts, records and reports as may be required and is the only way in which adequate statistics will become available on the volume of air cargo handled by forwarders to serve as a basis for determining the reasonableness of rates and charges as the industry develops.

Secs. 410 and 411. Both these sections deal with Federal financial assistance and unfair practices.

Secs. 412, 413, and 414. These are concerned with pooling and other agreements. The import of these sections is that carriers be required to file copies of agreements with the Board. There should be no objection to this from the air freight forwarders.

Sec. 415. This provides the Board with general powers to investigate activities of direct and indirect air carriers.

Sec. 416. In this section provision is made so that the Board, from time to time, may establish reasonable classifications of carriers. This certainly should apply since undoubtedly new classifications covering the operations contemplated by air freight forwarders will be created as a basis for any regulation or exemption orders that may be issued.

If the above provisions are held to apply there appears no reason why air freight forwarders should not then be exempt from the following additional economic provisions in the Civil Aeronautics Act of 1938; at least in the initial steps of their regulation:

Sec. 401. This section deals with certificates of convenience and necessity. Whether air freight forwarders should be required to obtain such certificates is one of the most important questions now facing the Board. The Board held some time ago, in the Railway Express Agency case decided in 1941, that this company, an organization conducting freight forwarding services, was not entitled to a certificate under the Grandfather clause of the Act. In so doing the Board, in substance, indicated that it was its opinion that the Act contemplated certificates of public convenience and necessity only for air carriers engaged directly in freight transportation.

It may well be that Sec. 410 (c) of Part IV of the Interstate Commerce Act will point the way for the CAB in its initial regulation of freight forwarders. This section provides that the ICC shall issue a permit to any qualified forwarder applicant if the Commission finds that the applicant is ready, able and willing properly to perform the proposed service, and that the proposed service is or will be consistent with the public interest and the national transportation policy declared in the Interstate Commerce Act; otherwise such application shall be denied. It will be noticed that the ICC does not require the applicant to prove that public convenience and necessity demands the proposed service, and typically such permits are issued by the Commission without territorial or route restrictions.

This would be an excellent course for the CAB to follow at this time. Freight forwarding is not a natural monopoly, as is transportation, but has all the characteristics of private and competitive business. The considerations of public policy which require the limitation of the number of airlines, for example, are obviously not applicable to freight forwarding.

The Board also well knows that the applying for certificates of convenience and necessity requires the preparation of lengthy and often costly exhibits, the retention of counsel familiar with the Board's regulatory practice, and the attendance at public hearings, of all of which involve considerable time and expense. The public interest cannot be harmed in the same way by the financial failure of a freight forwarder, whose investment is limited and usually private, as it can be by the financial failure of a carrier, the safety of whose investment is a matter of public concern. On the other hand, the forwarders, by offering air transportation of property at lower rates than are otherwise available, can generate additional traffic not previously carried by air. It is felt, therefore, that the Board might well permit, under an exemption order, the operation of all air freight forwarders whom it finds fit, willing and able to provide such service.

It is true that the omission of the necessity of proving public convenience and necessity in effect removes any limitation on the number of those who may obtain permits or start in the business. It is felt, however, that the greatest benefits will flow to the shipping

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Braniff International Airways, Love Field, Dallas 9, Texas.

public if the number of freight forwarders who may operate is not limited at this time. There is a natural economic limitation to the number of freight forwarders who can exist and it is expected that the freight forwarding industry would quickly find its economic level without the necessity of regulatory limitation as to numbers.

Secs. 405 and 406. There is no necessity for making air freight forwarders subject to these sections dealing with the transportation of mail and mail pay.

Sec. 408. This deals with consolidation, merger and acquisition of control and should not apply to air freight forwarders. It is the section which concerns the rights of an air carrier and any other common carrier to merge their properties only when approved by specific order of the Board. This section merits special consideration because it concerns the right of an air freight forwarder to engage in freight forwarding by other means of transportation. Undoubtedly the most efficient freight forwarding will only result if freight forwarders by air are allowed to engage in the same service by other means of transportation. Unless a freight forwarder has such a right he will not be able to provide a fully integrated and flexible service. From the standpoint of the shipper it is also frequently desirable that he be able to deal with one freight forwarder organization for all service no matter by what means of transportation shipments may go forward thus saving double work and double accounting.

Sec. 409. Air freight forwarders should be exempted from the provisions of this section which deals with interlocking directorships. It may be desirable at some future date for the Board to subject air freight forwarders to this provision but it is surely not necessary in the initial stages of regulation.

These businesses may seem different- but they're all alike, in one thing

Scripts and recordings for radio programs must get there in a hurry. This is one reason why stations, networks and agencies are big users of Air Express. Here's where *speed pays.*

Quickest way to get samples, new products, and presentations for new lines to salesmen on the road and to distributors is by Air Express. Beats competition; sales come quicker! *Speed pays!*

Speed is essential in delivery of all kinds of valuable papers, stock certificates, bank checks, etc. The safe, quick way to ship them is by Air Express. *Speed pays.*

Speed pays in your business, too!

Fast-moving businesses must rely on speed for greater profits . . . and speed means Air Express. This speedy service is more valuable than ever because of increased flying schedules, bigger and faster planes. Even coast-to-coast delivery overnight. What's more, rates are low. For example, you can send 14 lbs. 1300 miles for only $5.59. Heavier weights—any distance—similarly inexpensive.

- Low rates—special pick-up and delivery in principal U.S. towns and cities at no extra cost. • Moves on all flights of all Scheduled Airlines.
- Air-rail between 22,000 off-airline offices.
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AIR EXPRESS

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Write today for Schedule of Domestic and International Rates. Address Air Express Division, Railway Express Agency, 230 Park Ave., New York 17. Or ask at any Airline or Railway Express office. Air Express Division, Railway Express Agency, representing the Airlines of the United States.

Now . . . the Expendable Pallet

Here is something new in pallets . . . An expendable pallet container for handling unit loads. Made of weather-proofed fibre board, the new container is collapsible to conserve space in storage.

By SELMA WINEMAN and HAVILAND F. REVES

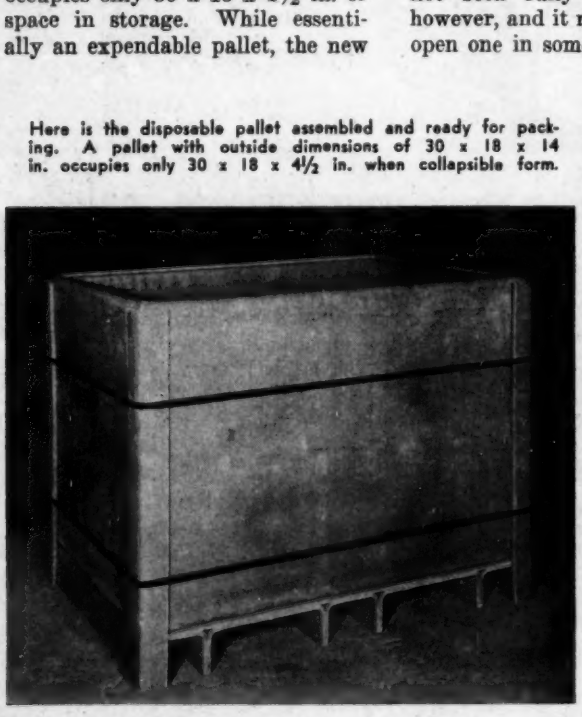
PALLETIZING is gaining widespread acceptance because it means time and labor saving in the handling and shipping of unit loads. Newest developments in this field include the disposable or expendable pallet which already is cutting shipping costs and reducing bookkeeping headaches for vendors, manufacturers and distributors. The expendable pallet is designed to afford an economical means of handling a unit load from the point of production, through various distributive stages until it reaches the hands of the consignee when it can be discarded. It is made of chemically impregnated fibre-board and is available in collapsable form for convenience in storing until ready for use. A pallet with outside dimensions of 30 x 18 x 14 in. occupies only 30 x 18 x 4½ in. of space in storage. While essentially an expendable pallet, the new development is said to be strong enough for reuse.

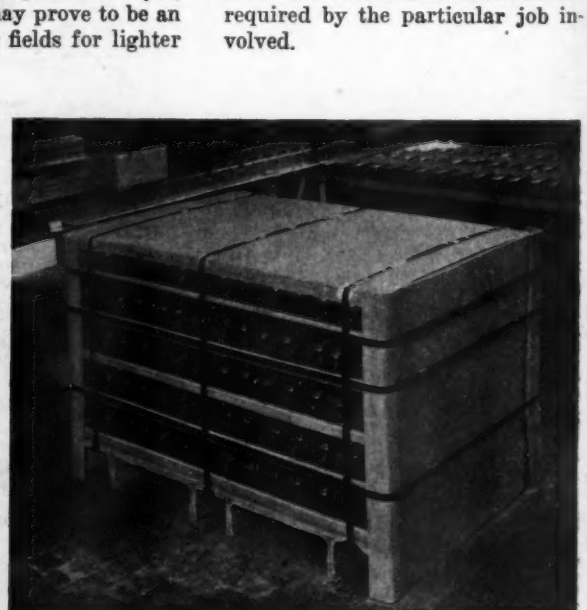
Pallet containers of the type illustrated on this page have been accepted, it is said, for use in connection with various commodities including glass by the railroads and by the American Trucking Assns. Proponents of this type of packaging do not claim it will prove the best container for all types of shipment. Its major use, they have already found, is in the shipping of parts from vendor to plant. The finished product, it is pointed out, frequently can be handled more economically by a wooden crating procedure, especially where the item is large and the crate is built around the merchandise during the final processes of manufacture. This area has not been fully explored as yet, however, and it may prove to be an open one in some fields for lighter weight, less expensive fibre-board containers.

The disposable pallet is already being used by industrial plants in the east and middle-west and has proved satisfactory.

Full development of the expendable pallet container is currently being handicapped by the paper shortage and the high resulting costs. Partly to fill in this gap and partly because it has a long-range use of its own, packaging engineers are turning to a lightweight wooden pallet which can be reused. These new light-weight containers can be lifted by a girl worker. They also have the advantage of being tailored to specific jobs in the case of the disposable pallet. The lightweight pallet is water and weatherproof. It is being made in standard dimensions unless modifications are required by the particular job involved.

Here is the disposable pallet assembled and ready for packing. A pallet with outside dimensions of 30 x 18 x 14 in. occupies only 30 x 18 x 4½ in. when collapsible form.





Here is a pallet ready for shipment. Because of the indestructible merchandise it contains, side panels have been eliminated. Here also is a pallet ready for outlaying and strapping.

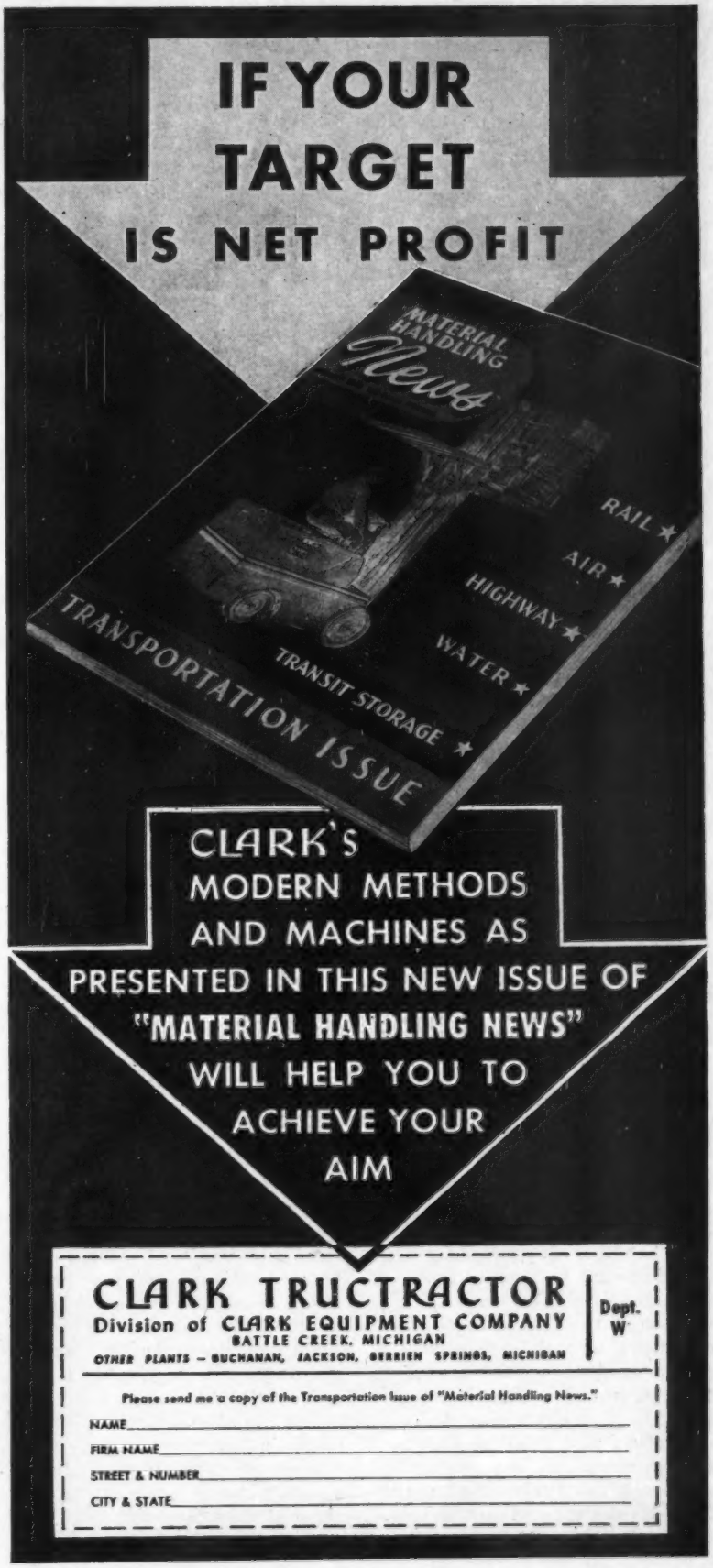
STANDARDIZED SYSTEM

(*Continued from Page* 30)

were necessary for the war effort. Today, however, they are again available. On this account we can predict with certainty that more and more lift trucks will be equipped with rubber-tired wheels which have a minimum power loss.

The lift truck, it so happens, is eminently fitted to be equipped with rubber-tired wheels. This is due to the fact that it rarely carries a load unless it is in motion. It seldom is required to carry a load for long periods when standing at rest. Rubber wheels do not perform with entire satisfaction at all times. If they are required to carry a load over long periods of time while resting in one position this tends to flatten the wheels under the high pressure. We need not, however have this concern when considering lift trucks equipped with rubber tires. There is one important feature regarding rubber tires for lift trucks and that is the fact that a rubber-tired wheel must be of considerably greater width to carry the same load compared to the metal wheel which it replaces. It would, therefore, seem logical that the modern lift truck should be designed primarily for rubber-tired wheels allowing the necessary room for them. They can then be readily replaced with metal wheels if the occasion demands. Unfortunately, the reverse was true in the case of the early lift trucks. Nothing was known at that time about the desirable characteristics of rubber. In fact, rubber prior to ten or fifteen years ago was totally unsatisfactory for transporting heavy loads as it was found to require four to five times the effort that metallic wheels required. Due to this fact, therefore, the original lift trucks of 25 to 30 years ago were designed with relatively narrow faced wheels which were then difficult to replace with wide faced rubber wheels. That is one of the reasons, perhaps, why many lift trucks have in the past not been equipped with rubber wheels because adequate face of rubber-tired

(*Continued on Page* 67)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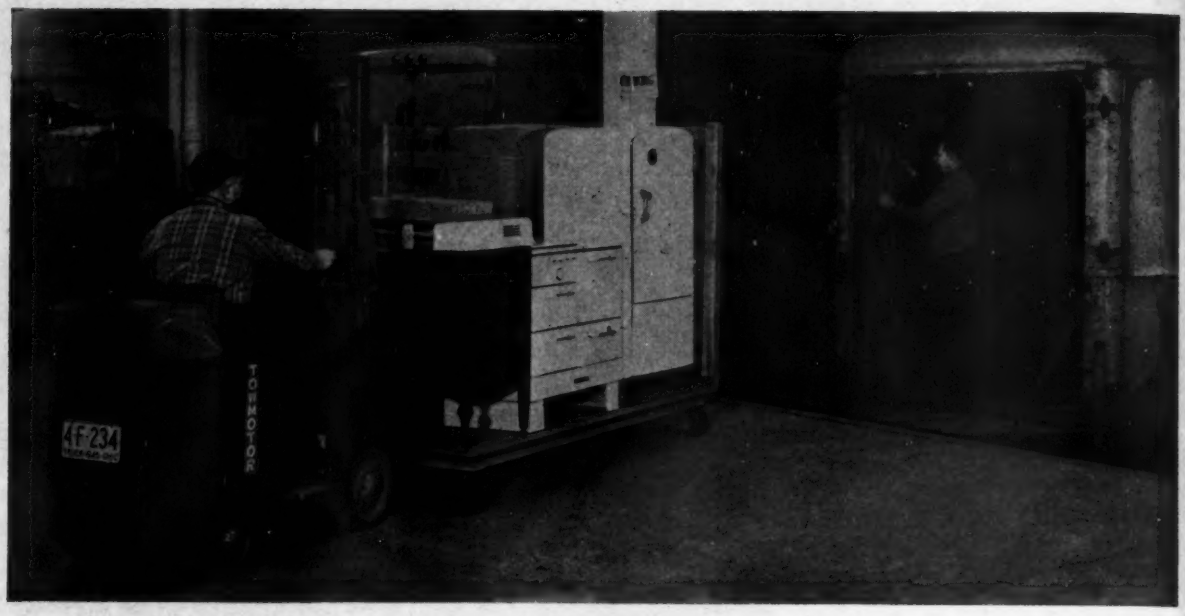
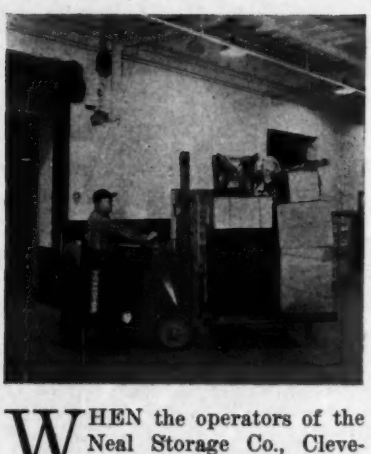


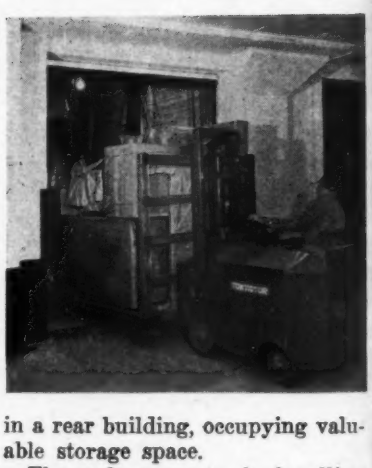
Unit Loading of Household Goods



Manual handling by warehouses of incoming and outgoing household goods often is a time and profit consuming operation . . . A modernized unit loading program has solved this problem for the Neal Storage Co. and is expected to cut handling costs 30 percent.

By JOHN P. HELLER

Special Correspondent



WHEN the operators of the Neal Storage Co., Cleveland, Ohio, launched a plantwide modernization program late in 1945, their main objective was to incorporate an in-plant method that would surpass the traditional and tedious piece-by-piece handling of household goods. The dominant bottleneck throughout the storage industry has always been the great loss of time caused by the back-breaking labor, performed by the usual four or five man crew, that moves household goods from the receiving dock to its ultimate destination in the storage rooms.

Prior to its modernization, the Neal plant consisted of an office building, garage and four six-story storage buildings. These buildings, two on either side of a center driveway, were designed to receive storage from highway trailers that were backed up the driveway, to their respective receiving doors. The conventional former practice was to lay a heavy wooden plank from the receiving door to the trailer. This unloading procedure would usually leave a barricade of individual household items, stacked at the door, causing a transit stalemate and retarding the flow of following orders.

Neal's traffic department was located in the front office, where space was at a premium due to a steady increase in business. The superintendent's office and the packing department were situated in a rear building, occupying valuable storage space.

The real answer to the handling problem was found when President H. C. Neal designed a unique high-gaited live skid to be propelled by a 2,000 lb., 48-in. fork truck. The skids were made in the Neal cabinet shop, and emerged as 240 cu. ft. carriers to service unloading highway trailers. The dimensions of the ¾ in. plywood skid bed are 5 ft. x 8 ft. with a 6 ft. high oak frame on either two or three sides. This unit is mounted on four rubber tired, swivel type, ball bearing casters. Two 4-in. steel channel guides are bolted under the bed to provide a secure grip for the truck fork. The channels are flared at the ends to permit

quick entry of the fork.

The truck operator has complete control of a loaded carrier in transit, by elevating one end of the unit approximately three inches from the floor with the fork, and allowing the two swivel casters at the opposite end to perform much like the wheels on a semi-trailer. Two larger carriers with a bed measurement of 6 ft. x 10 ft. were also constructed and are used when orders contain unusually large or bulky pieces. To facilitate movement of the unit load carriers, plant modernization included raising the floor level of the old driveway and garage from the ground level, flush with the first floors of the storage buildings.

This new, covered transit floor, comprising 10,000 sq. ft. of construction, united all four storage buildings as one unit. A new, enclosed, shipping and receiving dock, 120 ft. wide with bays 50 ft. deep, to permit entry of ten highway trailers at one time, was constructed at the extreme rear of the plant, and connected on the same level with the new transit floor.

Highway trailer motor repair equipment, water and air lines, have been installed at the receiving dock. A 4,000 gal. gasoline tank is located in the rear yard. These service and repair facilities have saved many hours that would have been spent in outside repair shops

New weighing equipment includes a 6,250 lb. capacity dock scale, and a 45 ft., 50 ton, yard scale. The generous length and load capacity of the yard scale assures instant weighing of the largest highway trailers.

The traffic department was relocated in the superintendent's new office, which was constructed on the unloading level at one side of the dock. This more practical point of operation resulted in added efficiency of the department, and has relieved the over-crowded office building.

The superintendent's office has been equipped with an inter-communications system that permits instant contact with any section of the plant. A wide expanse of windows that band the office, enables the dispatcher to observe the

(*Continued on Page* 87)

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There's a world of power in Ready-Power-equipped electric trucks and it's yours in any amounts needed to handle your jobs with utmost efficiency. Ready-Power gas-electric Units generate dependable electric current, in unlimited amounts, right on the truck chassis. Keep them working as many hours as you want. They won't slow down. Equip any make truck with Ready-Power.

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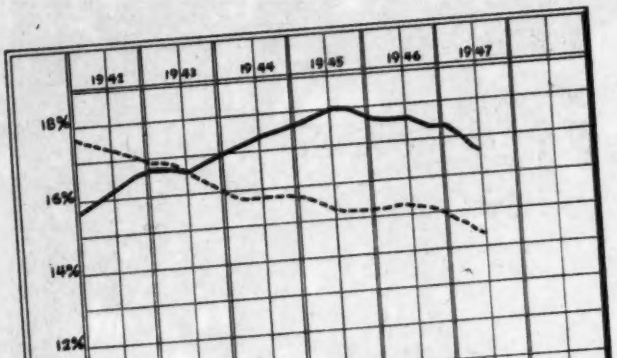

More Profits Through Controlled Distribution

7. The Distribution Controller

By R. M. COBURN
Marketing Consultant

In the scientific management of distribution there must be definite segregation of the responsibilities of line and staff activities . . . But even the best organization cannot function without external control and this control can be best exercised through the medium of a distribution controller.

THE introduction of scientific management into distribution simplifies the principles of operation, although it may introduce in some instances, a certain amount of necessary complexity. Management is clarified by a definite segregation of line and staff activities and by detailed delineation of the specific responsibilities and authorities entailed in each individual function. Problems seem to become more complex as a result of specific divisions of duties. What actually happens is that hidden complications tend to be brought to the surface where they become more visible. This is especially true in distribution where personnel are often widely separated and where there are many varieties of professions, trades and temperaments at work.

In order to provide machinery whereby such an organization may operate efficiently, it was suggested in previous articles that a system of standards, methods (standard practice) and controls be maintained. The risk involved in this "system within a system" is that it cannot govern itself, but must be controlled to a great extent by an instrumentality which is partially outside of it.

> "There must be established a systematic procedure, based on the defined standards, for the execution of work; a procedure which directs the researches, establishes and maintains standards, initiates operations, and controls work (in process); which facilitates each specialized effort and coordinates all specialized efforts to the end that the common objective may be achieved with a minimum of waste of human and material energies, and with a maximum of human welfare and contentment."[1]

The work and plans of one function are dependent in whole or in part on others. This eternal interlacing of activities demands the utmost in direct and indirect control. Now, effectiveness of control presupposes an equivalent centralization of power; and the more control required, the more centralized that power must be.

> "Too often we allow routine to grow like Topsy, with resulting painful and nerve-wracking revisions that have rather unfavorable effects upon personnel."[2]

The best organization, even when accurately charted, is still merely something on paper and will function after a fashion without external control. Managements want efficiency because that is the way to profits, but they do not always acknowledge either in thought or action all of the implications that stem from the kind of control required to achieve that efficiency. The formal segregation of line and staff functions and the diametrically opposed temperaments, abilities and experience of line and staff executives automatically create the necessity of a common denominator to bridge the differences between them. The instrumentality which can also interpret one to the other is the ideal and logical means to effect complete integration and control.

> "Management is the control of *quality, quantity* and *costs*. But it is more than just a control of these three factors. It is a *balanced* control which keeps these factors constantly in the proper relation to one another. If we look back in the pages of our industrial history, we shall notice a great number of companies that have fallen into decay because in their endeavors to compete under our capitalistic structure their managements failed to keep the

[1] *The Principles of Scientific Management* by Frederick W. Taylor, Harper and Bros., N. Y., 1934, p. 11.
[2] *Variable Budget Control Through Management by Exception* by Fred V. Gardner, McGraw-Hill Book Co., N. Y., 1940, p. 22.

proper balance among these three factors."[3]

With all functions of distribution in a single department, it may be reasoned that the vice president in charge should assume the responsibility of organizational control, himself. That is theoretically possible only in a smaller enterprise which has but few executives. If the vice president in a larger company were to act also as distribution controller, he would find himself so mired in a mass of detail as to be almost useless as a policy maker. It is in that capacity that his real value lies. That is why, in military organization, the commander-in-chief of a unified operating force makes his chief-of-staff responsible not only for all staff work but for the actual integration of line and staff activities. He thus leaves himself free for over-all planning and strategy. There is a real parallel of function between the two chiefs-of-staff. In business the distribution controller will have the same dual responsibility as his opposite number in the army.

Many of the few concerns that have marketing research departments apparently do not hold them in high esteem. Some of them are under the direct supervision of sales managers or even assistant sales managers. Several allow the advertising manager to direct all market research. Some go to the other extreme and put marketing research directly under the president. Although that raises its prestige and authority it is not good organization. It is out of place, tempting him to extend his personal attention too deeply into departmental details.

How to utilize for greatest effectiveness, a marketing research department, is one of management's unsolved problems. A good example of its attitude and its inability to understand the fundamental meaning of sound organization and particularly how line and staff officers may best cooperate, may be found in a speech delivered at the Spring Conference of the American Marketing Association at Boston, May 1946. G.

[3] Fred V. Gardner, Op. Cit.

(*Continued on Page* 77)

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50% more
STORAGE SPACE
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all free!

"We needed additional warehousing space—badly. First, we thought of adding a new wing. But the Crescent Electric PALLETIER gave us all the space we needed at far less cost. Vertical space—never before used. Now, tier after tier of our palletized materials are stacked to ceiling height."

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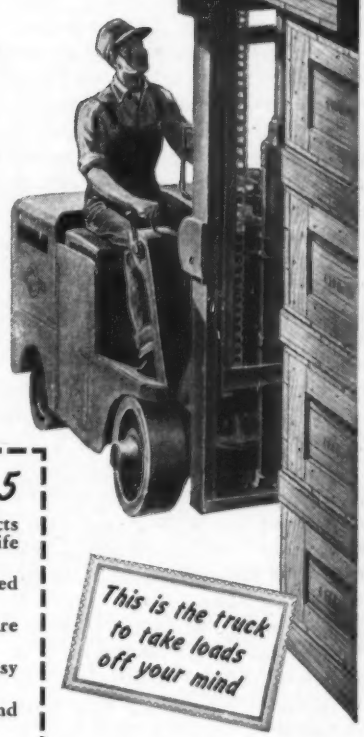

This is the truck to take loads off your mind

Crescent
ELECTRIC
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operating cost may decrease overall cost because it speeds up production, economizes on space requirements, cuts production labor cost, minimizes spoilage, has a high safety factor.

Another reason why management seldom gives materials handling the study it deserves is the fact that handling is not visualized as one function in operation, but a series of unrelated segments of operation. Usually, in the production department, handling is under the production manager; in the shipping department, under the shipping clerk; in the company warehouse, under the man in charge of storage. Handling operations are assumed to be disassociated and without relation to one another or to other operating functions. Obsolete and inadequate equipment in one department can create bad leaks or bottlenecks in other departments unless there is proper synchronization. Under divided authority, such coordination is impossible. A materials handling coordinator or a periodical handling conference will solve this problem.

In the maintenance of production schedules, handling often is the dominating influence. Equipment that will perform all required movement without re-handling from original carriers is a big factor in stepping up production schedules. The use of palletized loads, for example, is stimulating output in many plants. Equipment not properly molded to requirements can "kill" production schedules. In the intricate interplay of handling routine from department to department it is impossible to get a sharp focus on the entire picture without talking things over in conference, at least once monthly, with those who are close to the field of action.

The inter-plant movement of goods in many mills and factories is below par because the materials handling equipment is obsolete. Sometimes available equipment like Topsy, "just growed" with plant extensions or increased output. As a result, management is not getting full potential in the way of economies or finished production. Overall study is seldom conducted to determine whether better coordination of handling units will effect greater economies or will speed up movements. Such studies will disclose whether the replacement of existing equipment with more modern or different units will improve inter-plant haulage. Today, with production stepped up in many plants to maximum capacity, handling cost can hit the stratosphere unless the movement of goods from raw storage through processing and to the carrier is supervised intelligently.

High labor cost and shorter hours further complicate the problem. Handling equipment that may have given satisfactory service in the days when labor costs were lower and hours longer is a profit-pilferer today. Maybe you have some of this equipment in your plant. It will pay you to check. In the event that you have never had a materials handling conference up to now, a good way to start the ball rolling is to go witch-hunting for the "weak sisters." Square pegs in round holes hamper movement and increase handling costs. Whether to use or change to elevating trucks, platform trucks, high-tiering trucks, ram and fork trucks or specialized trucks, are some of the questions eligible for consideration at a materials handling conference.

From the receiving platform to the shipping platform, materials handling should be considered as a single coordinating function of operation, not a series of unrelated inter-plant haulage processes under divided authority. When so viewed it is possible to integrate and coordinate plant transportation and general operation into a unified format that will keep costs at minimum and profits at maximum. In lieu of a materials handling coordinator, this integrating medium is the materials handling conference which should be held regularly to study production charts, "synchronizing" records and equipment adaptability to existing requirements, to keep a close check on handling as one function of operation and to supervise periodical test inspections.

If the problems involved seem to defy solution, handling engineers may be asked to sit in at these conferences. The prevailing practice is to consult these engineers only when the system breaks down for one reason or another or when certain segments jam the whole. The wise procedure is to adopt preventive practices that forestall such contingencies by means of regu-

Mayflower Convention

Plans for the launching of a national advertising campaign to make the name Mayflower "synonymous with dependable moving and storage in every community in the land," were announced at the 15th annual convention of the Mayflower Warehousemen's Assn., held at Victoria, B. C., May 26 to 29.

Officers and directors were elected as follows: R. G. Culbertson, Culbertson Warehouse & Deposit Co., Seattle, president; Carl F. Bailey, Try Me Transfer & Storage Co., Huntington, W. Va., secretary-treasurer. Vice presidents are: Frank P. Finnegan, Finnegan's Express & Storage, Inc., Newburgh, N. Y. (Eastern Div.); B. W. Hardesty, Hardesty Trucking Co., Muncie, Ind. (Central Div.); L. W. L. White, Sr., White Transfer and Storage Co., Huntsville, Ala., (Southern Div.); E. J. Sass, Fetter Storage Warehouse, Chicago (Mid-Western Div.); M. R. Goodwin, Goodwin Moving & Storage Co., Spokane, Wash. (Pacific Coast Div.)

R. G. CULBERTSON

The new directors are: Arthur C. Smith, Smith's Transfer & Storage Co., Inc., Washington, D. C.; Harry C. Peters, Peters Moving & Storage Co., Inc., Louisville, Ky.; Harry W. Rogers, Rogers Transfer & Storage Co., Inc., Galveston, Tex.; V. P. Chamberlain, The Boyd Transfer & Storage Co., Minneapolis; V. D. "Si" Slocum, Van Nuys Transfer & Storage Co., Van Nuys, Cal.; J. Lowell McAdam, Orth Van & Storage, Pasadena, Cal.

larly scheduled consultations with all department heads directly concerned with handling.

Materials handling plays a more important role in operation than many managements realize. Up to now, it has not been given the consideration it deserves. Too often in the past, scant consideration and limited understanding of the essentials to efficient handling routine have begotten decisions that eventually plagued management with high handling cost and bad headaches. In this postwar period, when operation is honeycombed with more bees in the bonnet than ever before the old-fashioned method of handling handling is dangerously ineffectual. The wise management will start now to handle handling with care.

MODERN HANDLING

(*Continued from Page* 51)

is needed to fill a customer's requisition.

5. The fatigue factor has been reduced. It is no longer necessary for warehousemen to wrangle, tote or carry units or merchandise that are heavy and unwieldy.

In addition to these several major advantages, many lesser benefits which add up to a large total have resulted. Although the company is old in the warehousing business but reatively young in the use of modern operating methods, its management feels that many competitive advantages have been gained by the change of methods. It also is felt that other and even better ways of handling material eventually will be evolved. The company's experience has proved that there are few items indeed which cannot be assembed into palletized unit loads. It cordially invites inspection of its facilities by those who believe they can profit from the company's experience.

The August issue of DISTRIBUTION AGE will feature Highway Transportation.

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Aetna Plywood & Veneer Company, large Chicago distributor, cuts crate weight 75 pounds, and saves labor and material with Acme Steelstrap methods

If packing materials were expensive and hard to get, if labor were scarce and costly, what would you do?

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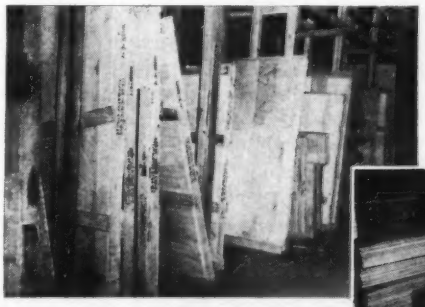
Acme's Shipping Specialists are located in principal cities. They are ready to work with you to help solve your general or specific shipping problems *without obligation*.

Send the coupon below or write for a booklet containing more true case histories of shipping problems in various industries which have been solved by Acme Shipping Specialists and Acme Steelstrap methods.



Old crating method—For one size plywood, crate cost $1.39 for lumber and $.375 for labor—a total of $1.765. Total weight, 350 pounds; contents 20 pieces.

Acme Steelstrap and Corrugated Sheets—materials cost per bundle, $.775, and labor, $.075—a total of $.85. The bundle weighs 275 pounds and contains 20 pieces.

More savings ahead for Acme Steelstrap users—No. 3 Steelstrapper, the lightest tool made, is now available. Magazine holds 100 seals. Tensions, seals, and cuts the strap in one operation. Small base requires only 5-inch strapping surface. Two levers working in opposite directions make for better balance and easier handling.

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IHC to Standardize Handling

International Harvester's top executives have launched a standardization program which aims at the simplification of materials handling and its integration with all other related activities.

By RANDALL R. HOWARD

Special Correspondent

ONE of the major postwar improvement programs now under way by International Harvester Co., Chicago, is the standardization of materials handling equipment and methods. This is a sizable undertaking, since IHC activities involve annual assembly of hundreds of millions of tons of basic materials ... the manufacture of more than 300,000 different items which are often made at one factory and fabricated at another . . . and the final shipping of farm machinery and tractor products to IHC dealers in all parts of the world.

The company's materials handling program is linked intimately with its related program of "product protection," which is planned to safeguard products through all phases of manufacture and packing, until loaded as complete machines or service parts for shipping to distributors. As part of this total program, the company has initiated an annual materials handling conference. The first conference was held in Jan. 1946 and the second in April of this year.

At this latter conference, attended by more than 50 general office representatives and about 100 representatives of 18 IHC plants and transfer houses, J. W. Armour, assistant manager of manufacturing research, stated that the materials handling section in manufacturing research was well provided with equipment and facilities for taking an active part in the improvement and control of the company's materials handling program. "We will act," said he, "as a clearing house for the development of ideas, and these ideas are already coming from a number of sources . . . As a matter of interest, we have at this time somewhat over fifty projects currently under consideration."

He mentioned that planning and scheduling of work also would be emphasized. "The importance of this phase of materials handling," said he, "cannot be overstressed. The very close cooperation between materials handling personnel, materials controllers, storekeepers, and layout and planning people is probably of greater importance than the procurement of mechanical handling equipment and devices."

Mercer Lee, IHC vice president, reminded the conference that the handling of materials "is as vital a part of the operation of a factory as the circulation of blood is a vital part of the functioning of a body. Materials are the life blood of a factory. It is one of our duties to see that our factories do not suffer from hardening of their materials arteries, from constriction of the veins, or from clots which will halt the flow altogether . . . I know of no other phase of plant operation where the possibilities for making a real contribution are so great as they are in the field of materials handling."

R. F. Weber, supervisor of materials handling and product protection, stated "in a broad sense, the activities of the materials handling section of manufacturing research cover the fields of materials handling, product protection, packing and loading. In reviewing the section's activities, he pointed out that the IHC Product Protection Manual, issued in 1946 was a standard for all com-

Here are the new IHC "picture frame" type of pallet assemblies for depots.

Important economies in the overall cost of distribution have been effected by IHC engineers through materials handling studies.

pany manufacturing and packaging operations. He also described the first draft of the projected new handling manual, when finally approved, this manual will serve as a company standard and will be used as a training department guide.

Harry W. Carpenter, materials handling engineer, Tractor Works, reviewed recent activities of the IHC materials handling advisory committee. This committee has ten members, two from manufacturing research and one member from each of the following departments: truck division, industrial power division, implement division, traffic department, foreign operations, farm tractor division, refrigerator division and depot operations.

The Committee which was organized about a year ago, has held monthly meetings at various plants and also a number of sub-committee meetings. One chief activity had been to set up the company-wide standards of equipment or method agreed upon after careful research in plants. One of the company's most important new standards relates to an all-purpose pallet system.

During the proceedings of the first materials handling conference held early in 1946, the problem of pallets was widely discussed. As an example, one plant had reported 35 different types of skids or pallets in use. Processing at another plant required the handling of 30,500 different unit items. Another plant used 2,000 different parts in the manufacture of a single unit, 75 percent of these items coming from outside vendors. One plant, it was disclosed, had developed a collapsible type of box pallet, which resulted in large annual savings. Another plant reported similar economies as the result of using special skids and pallets which were expendable. Forum discussions highlighted the need for standardization.

At the April conference, Mr. Carpenter, in his committee report, briefly described the new IHC all-purpose pallet system. It consists of a 42 x 42 in. double faced pallet and a number of interchangeable pallet panels. These include a base or cover, a separator, a 24 in. high box slide, and an 18 in. high box side. There also is con-

(*Continued on Page* 86)

IHC officials studying a model set-up of lift truck and palletized load.

HOW MUCH FOR

A cost analysis, based on a recent DA survey, reveals that many organizations charge other distribution costs up to transportation with the result that rate variations assume an importance that is not warranted by the facts.

BUSINESS has turned the spotlight on many of its practices, methods and habits in order to determine ways of combating the dangerous rise in prices. It is only natural that methods and practices used in the field of distribution come under scrutiny, for distribution costs are included in varying proportions in almost every price tag. The final selling price of any article of finished goods represents the combined costs, plus profit of a number of individual operations and movements through business channels.

Transportation plays some part in the producing and distribution of almost every product offered for sale to the public. Of particular interest was a report in the March, 1947, issue of DISTRIBUTION AGE concerning the results of a questionnaire this magazine sent out to determine the allocation of distribution costs in a number of industries. The response to the questionnaire revealed some practices and customs that seem to invite further study. The question was: "Approximately what percentage of your overall distribution cost is represented by each of the following:

MATERIALS HANDLING
TRANSPORTATION
FINANCE
INSURANCE
PACKING & PACKAGING
WAREHOUSING
MARKETING
SERVICE & MAINTENANCE"

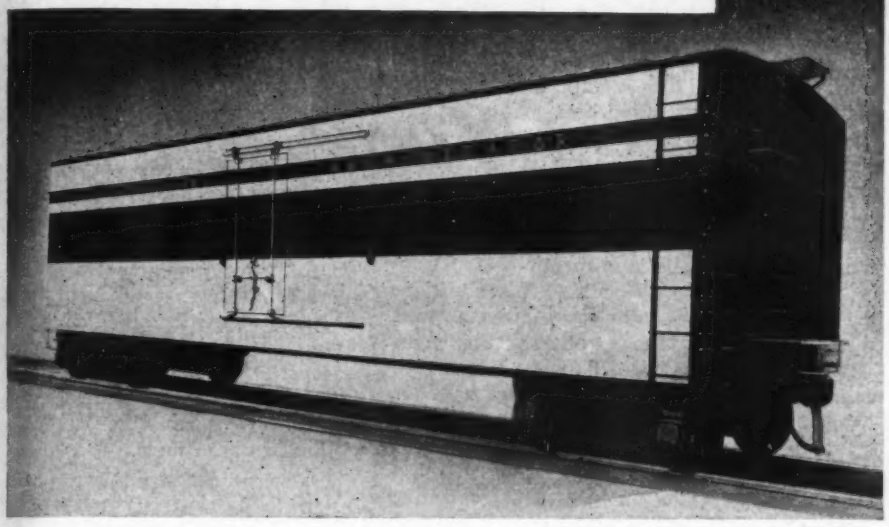
A tabulation of the replies reveals that detailed knowledge of the costs of distribution are not known in all of the industries that were selected. In fact, only 13 percent of the firms addressed answered the question at all and the editor's comment was that "many firms are unable to apportion their distribution costs among the eight basic distribution functions."

A study of the returns reveals that "Transportation" was charged up in all except two industries—petroleum products and wholesale iron and steel. Of the twenty industries that indicated the percentage of transportation costs as related to the total distribution cost, the figures varied from a low of 2 percent for rubber products to a high of 90 percent for wood products. The tabulation for rubber products, it will be seen, broke distribution costs down to eight full categories. Wood products, on the other hand, was broken down to but two categories; transportation, 90 percent and warehousing, 10 percent.

Overall distribution costs must take transportation into consider-

A two-way communication system speeds shipping.

TRANSPORTATION?



By K. W. MERRITT

Vice President of Traffic
Railway Express Agency

ation in almost every industry, as these results clearly show. It is certain that if a similar study were made of finished products only, transportation costs would be represented in all cases.

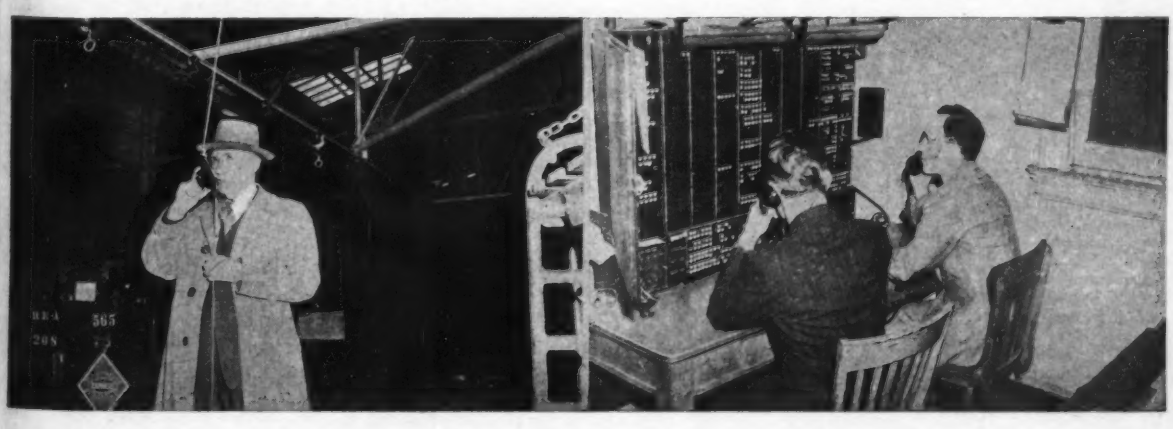
Unless choice of transportation is made with due regard for the costs of the other steps in distribution, transportation costs are bound to assume an undue importance. A compelling reason for a re-appraisal of all functions of distribution is the current rise in transportation costs as well as all others.

For the purposes of this discussion, let us assume a state of normal conditions in transportation Some forms are faster than others and in general the faster forms carry higher rates. Time in distribution varies in importance with the type of products to be distributed, assuming normal conditions of supply and demand.

If an organization views its total distribution costs solely in the light of transportation and one or two other steps in the process, the relative cost of transportation looms large. Any variation upwards or downwards in rates will assume an importance far out of proportion to the *actual* change in distribution costs. Referring again

Pete Sweeney, assistant agent of the express terminal, speaks through hanging microphone.

Vehicle movements are recorded by means of this dispatching board.



to results of the DISTRIBUTION AGE questionnaire: In the wood products industry, any increase would be charged 90 percent against overall distribution costs, whereas the same increase would only be charged 2 percent against such costs in the rubber goods field. Therefore, an announced increase in rate will assume its correct importance to the executives of the latter industry.

In a factory or production line it is customary to measure, with great accuracy, the cost of each operation, taking into consideration such well-known factors as man-hours, machine time, etc. When the product leaves the shipping room, it begins to move at certain calculated speeds and at certain calculated costs, including transportation.

It is indicated from the tabulated results of the DA questionnaire that the calculated costs are often lumped into one, two or three convenient categories; whereas, the product actually moves through several more functions in the process of distribution.

As distribution, the American way, must equal production in speed and efficiency, it seems only logical that cost control should be maintained in this field with an accuracy equal to that in the field of production.

Because of increased wages, materials, rents, supplies and other factors, it was absolutely necessary to raise express rates last year. The increase permitted by the Interstate Commerce Com., and which became effective on Dec. 13, 1946, was for the sole purpose of meeting these increased costs of the Railway Express Agency. Subsequently, it became necessary to apply for an additional increase, which application is pending, to obtain sufficient additional revenue to adequately compensate the railroads for transporting traffic over the long-haul portion of the express movement. This additional revenue is to pay car rental, terminal and many other costs incurred by the railroads when they handle express traffic and which have also been subject to substantial increases. It was shown in the application that there have been no adjustments in express rates since 1922 specifically to cover increases in costs of the railroads incurred when they handle express traffic.

Naturally, this application for increased express rates created a great deal of interest. One of the largest groups of express users, the retail garment industry, foresaw the diversion of large amounts of traffic to other forms of transportation, as reported in an article in *The New York Times* of Friday, Mar. 14, 1947. We are very close to the retail garment industry and it has been a good customer for years. Their reaction to any move on our part is of real importance to us.

A step-by-step approach to distribution costs in this field is as advantageous as others. Inasmuch as fast transportation is such a vital factor in the distribution of style merchandise, it may be of even greater importance.

A new field, air freight and air cargo, was greatly enlarged after the war. Hundreds of planes were made available by the government for ex-servicemen to buy and go into the air freight business. Unfortunately, the speed of growth was not maintained after the initial impetus for many and various reasons although the net gain has been huge.

Government regulation has not permitted Railway Express Agency to enter into the air freight business because it is claimed that we are not certificated to handle air freight. We believe that if we are permitted to go into that field at rates approximately half of air express, we could increase the volume 300 percent. We testified to that at the CAB freight forwarder hearings. We have a nation-wide organization ready to handle air freight and air cargo in large volume.

This restriction was placed by the CAB at a time when every transportation facility was overloaded and the demand for fast transportation had never been greater. Even with temporary permission to operate air freight, we believe that the transportation situation would have been eased to some extent, and we would have developed sufficient business to enable many of the new organizations to operate with greater success, that is, providing we would have been permitted also to cooperate with the new non-scheduled operators.

At any rate, the net result was that a vast amount of unused airplane space remained at a time when it was sorely needed by industry in the process of reconverting to peace. With increased rates for transportation, as I pointed out

(*Continued on Page 95*)

Tabulated Replies to DA Questionnaire

COMMODITY	Handling	Transportation	Finance	Insurance	Packing & Packaging	Warehousing	Marketing	Service & Maintenance	Other Items	Total
Frosted Foods	5	20	5	5	10	40	10	5	..	100%
Poultry	15	50	5	5	5	5	10	5	..	100%
Beer and Ale	10	25	..	..	..	10	44	1	..	90%
Tea	25	25	5	5	10	25	..	5	..	100%
Groceries (W)	17	17	..	..	..	5	..	..	..	34.5%
Wood Products	..	90	..	..	..	10	..	..	..	100%
Paper	15	5	..	..	..	..	5	..	..	25%
Drugs	38	20	..	2	..	40	..	..	..	100%
Chemicals	19	60	..	..	2	8	10	..	..	99%
Petroleum Products	2	..	2	5	12	5	20	10	..	51.5%
Rubber Products	20	2	5	5	10	40	10	8	..	100%
Cut Glass	33	25	..	..	20	16	7	..	..	100%
Steel (Mill Products)	20	70	..	..	10	..	..	..	..	100%
Reflectors (Metal)	10	35	..	..	22	..	..	..	..	67%
Lead Products	50	5	..	..	5	..	..	5	..	65%
Electrical Goods	10	10	5	5	5	15	30	5	15	100%
Capacitors (Radio)	8	5	1	2	2	..	..	1	..	19%
Heavy Machinery	15	40	3	9	10	6	15	2	..	100%
Iron & Steel (W)	..	..	..	..	5	80	..	..	10	95%
General Mdse. (W)	12	15	13	9	8	10	25	6	..	98%
Imported Goods	10	10	15	15	..	..	..	..	..	50%
Trading Stamps	..	30	..	..	10	..	20	..	..	60%

(W): Wholesale.

STANDARDIZED SYSTEM

(*Continued from Page* 55)

wheels could not be supplied to carry the heavy load which was necessary. Regarding the lifting mechanism for the lift truck it should be simply stated that the most efficient arrangement is, of course, the most desirable. Most manufacturers now are ready to agree that the hydraulic system of lifting heavy loads is the most efficient and the safest. Any system which requires the least effort and causes the least fatigue on the part of the oprator certainly should be the most desirable type of lifting mechanism. The foregoing should be a convincing argument for the adoption of a single universal height lift truck. This height should be brought to the attention of potential users in the future and should be the duty of the manufacturer of the lift truck as well as his sales department. However, it is such an important matter to the general public that too much education cannot be brought about to influence its consideration.

Only about thirty years have elapsed to bring the lift truck system to its present great importance. This has really been a trial period and it has proven itself. Its use may continue for an indefinite period. Isn't it wise, therefore, to prepare now for the future and to adopt such standards that the future use of the system will be free from the disadvantages of the past so that such a worthwhile instrument for the handling of heavy loads can perform at its peak efficiency?

TRANSPORTATION

(*Continued from Page* 39)

Our proposed Keystone container, usable by all forms of transport, should be financed just as cheaply.

The use of containers in this country is not new. However, their use in England began in 1892 and they have been tried in various European countries. Through the International Container Bureau an attempt has been made to standardize sizes. What has happened to this movement since the war is not known to the writer. The English railroads, however, are maintaining a door to door container pick up delivery service. This has proved very successful but I wonder what will happen to it under the labor government's program for nationalizing transportation.

In the United States, the earliest recorded usage of containers is about 1904 when the American Car and Foundry Co. built them for the Anglo-American Lift-Van Co. Since that time, although the larger railroads have spent a fortune on them in one form or another, they have never seriously tried to standardize the container for universal use. The Bureau of Standards is now recommending the use of the 40 by 48 in. pallet for the handling of all kinds of materials in warehouses, factories and piers. This size is adaptable for use in semi-trailers and box cars and provides a means whereby goods may be kept in convenient unit loads for quick handling between the doors of the consigner and consignee. The Bureau of

(*Continued on Page* 84)

New Method OF HANDLING WITH

ESCORT TRUCKS

The Escort Appliance Truck for handling electrical appliances, refrigerators, water heaters, drinking fountains, stoves, etc. Also bookcases, filing cabinets, small iron safes and many other hard-to-handle items. Relieves strain, accomplishes a good delivery.

The Escort Junior handles trunks, boxes, small packages, etc.

Both trucks equipped with the famous caterpillar roller bearing step climber. Goes right up the steps or stairs on a fabricated rubber belt running over rollers set in a rigid aluminum frame.

Both sold on a money back guarantee. If not satisfied after fair trial return for refund of full purchase price.

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CUSTOM MADE LOADING— (*Continued from Page 26*)

3. Cars are unloaded in time: there are fewer demurrage charges. 4. There are fewer production hold-ups at the customer's plant due to delays in getting materials from cars into the shop. 5. Since freight cars are unloaded quicker, empties are put back into service sooner, and the shortage of freight cars is thereby alleviated. 6. Custom-made loading is in the direction of **greater** customer satisfaction through greater service to customers.

The fact that a shipper does bother to load shipments with consideration given to the customer's needs is a contributing factor in attaining increased customer goodwill. This good-will is becoming increasingly valuable as competition for customers' business becomes keener.

Custom-made loading, like custom-made tailoring, must be based on a precise knowledge of customer's *measurements*. In the matter of loading freight cars, it is not enough to inquire of the customer how he wants shipments to be made. If he owns fork trucks, he will naturally demand that all loads be palletized. In many instances palletizing is not feasible because there are no facilities available for systematic return of used pallets. When customers are required to pay deposits on pallets it leads to a great deal of undesirable paper work and red tape. In some cases loads may not lend themselves to palletizing and in many situations better shipping methods may exist.

Instead, the shipper should ascertain all facts about the materials handling equipment and systems at the customer's plant as well as the physical plant facilities for handling freight cars. The exact nature of the information required will depend on the type of materials the shipper handles. A manufacturer of hair-pins would hardly be concerned in whether or not his customer has a ten-ton crane. Each shipper will require certain information; consequently each shipper will have different questions to ask. In the following check-list is presented a brief listing of general questions that might be asked of customers. On the basis of the answers received, custom-made loading of freight cars can be undertaken.

There are many ways in which such information can be obtained. Salesmen or special representatives of the shipper can obtain information from interviews in customers' plants. If such a procedure is not possible, questionnaires can be mailed. Full use should be made of questions thus collected. Questions and answers should be analyzed and broken down. Such an analysis will reveal that there will be general areas of similarity among customers' materials handling systems and that many customers can be grouped together into separate categories, each of which can be assigned a certain shipping procedure. Thus, Group A might be all customers who are equipped to handle palletized loads; Group B, those equipped for crane handling up to two tons; and so on. The customers that do not fit into general groups can be assigned special shipping practices in accordance with their unique materials handling conditions. Group numbers can be noted on all shipping papers as a shorthand means of indicating standard methods of loading.

Each materials handling device has unique qualifications which to a great extent determine shipping methods to be used. A discussion of factors to be considered for different types of materials handling devices is discussed below.

Fork Trucks. Shipments to be handled by such industrial trucks must be arranged so that there is space for the insertion of the forks. Without this space, the fork truck cannot operate directly in handling shipments. The obvious way of attaining this elevation is by shipping goods on pallets or skids. However, unless means for returning used pallets or skids is available, many shippers cannot afford to palletize loads, especially where the merchandise is bulky and low cost. Alternative means are dunnage and stringers. Stringers which are lengths of wood nailed to the bottom of crates or cartons, are more desirable because they are an integral part of the package and serve to elevate the load at all times. Dunnage, on the other hand, elevates the load only during transit. As soon as the load is lifted, the usefulness of dunnage ends. Another means of adapting crates and cartons for fork truck handling is to design them with space between the top of the merchandise and the top of the crate for the insertion of the forks. Or, crates can be made with projecting tops to rest on the forks when forks straddle the crate.

New Lyon Terminal

This modern reinforced concrete terminal of the Lyon Van & Storage Co., incorporates latest improvements in freight handling and forwarding techniques and storage. The terminal is strategically situated, between the rapidly expanding San Fernando Valley and the busy Harbor industrial district. Facilities are provided for servicing the company's fleet.

A minor point, but one that can cause much difficulty in receiving shipments, is the direction of the opening of the pallet, skid, dunnage, or stringers. If the opening faces the side of the car it will be inaccessible to the fork truck during unloading.

Another factor to be considered is the car in which the merchandise is shipped. If refrigerated cars are used, palletized loading is of doubtful value since the elevated flooring in these cars is too weak to support the weight of the fork truck. Needless to say, open top freight cars are not designed for fork truck unloading.

A highly important factor is the type of accessory used with the fork truck. Trucks can be used with special accessories which can change the functions of the truck. Special forks permit the fork truck to handle rolls of paper; scoops, rams, cranes, roll handlers, and other accessories change the materials handling capabilities of industrial trucks and should be considered in custom-made loading. Each of these special types will necessitate different shipping methods. A ram truck will require that rolls of strip steel be shipped without dunnage with the open end facing lengthwise in the car; whereas, a normal fork truck would require that the steel be shipped on pallets or, if shipped loose, placed crosswise in the car so that the metal can be rolled onto the forks.

CRANES. Cranes as well as hoists, monorail systems, and other overhead materials handling equipment can operate efficiently only when materials to be handled are accessible directly from above. This, of course, precludes the use of any type of closed freight car in shipping materials to be crane unloaded. Custom-made loading for handling by cranes should be based on a knowledge of accessories used. As mentioned before, the use of a magnet will indicate entirely different loading procedures than if a sling was used to move materials. There are hundreds of grabs, grips, tongs, grapples, and slings being used for moving materials by crane. The exact nature of the accessories used should be determined and the loading procedure changed accordingly. The most desirable loading procedure is one wherein the crane plus a simple sling can be used in moving the load. To this end, eyebolts on the crate, or other means for receiving the hooks of the sling should be provided wherever possible. Motors with a threaded hole on top to receive an eyebolt is a good example of shipping practice designed for handling by hoist or crane.

OTHER MATERIALS HANDLING DEVICES. In designing loads for hand truck handling, the major factor is limitation of weight per package to permit efficient handling. The size of the load must be restricted to permit use of hand trucks. Where platform trucks are used for unloading, materials should be placed on skids which are high enough to receive the platform of the truck, or, mounted on dunnage of similar height.

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...all-'round material handy-man

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The sturdy, versatile BUDA Chore Boy is indispensable for hauling tools, supplies, spare parts—loading and unloading freight cars or trucks—in and around factories, warehouses and store rooms. There are scores of material handling jobs in your plant that can be done faster, safer and more economically with a BUDA Chore Boy. Easy to operate, it goes anywhere—up ramps—into confined spaces—over rough surfaces—with loads up to 2000 pounds. Initial cost is low, and operating expense is only a few pennies a day—runs all day on a gallon of gas. Write today for descriptive literature.

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segregated for each piece of equipment, management has no check on the expense of obsolete equipment. Nor is consideration given to the fact that old equipment is harder to handle, slower in operation, and more subject to breakdowns at peak periods than is newer modern equipment. The savings that can be made by proper handling justifies the use of the best equipment.

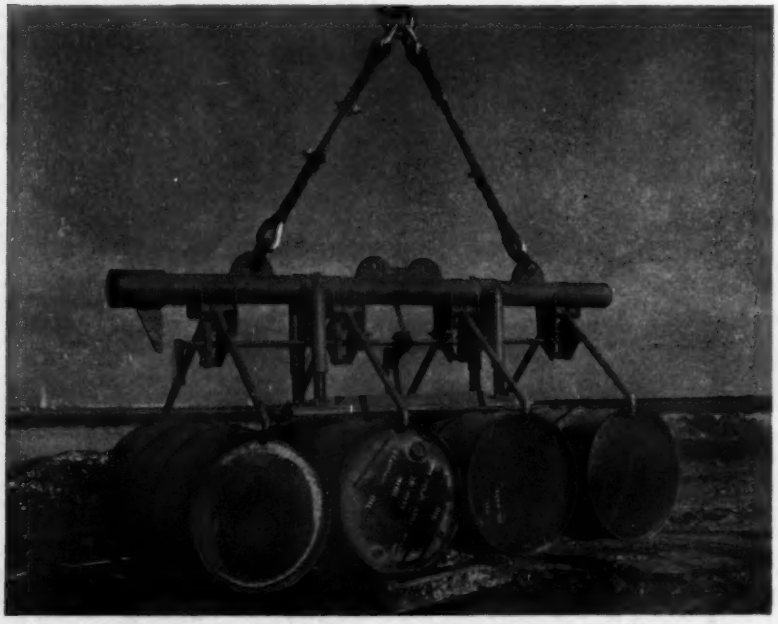
In machine, inspection and packing operations, considerable handling can be eliminated by the proper arrangement of the materials involved. For example, in the case of rough castings to be machined, economies can be effected if instead of bringing them to the operation on a truck and then placing them on the floor, where they must be picked up by the machine operator, put through the machine process, and then placed on the floor again for additional rehandling and transportation we simplify this procedure. In the first place, such castings should be handled in unit loads in conjunction with platform trucks, lift trucks and skids, fork trucks and pallets, or by similar means. The rough castings should be brought in and left on the transportation medium until required and individually handled into the machine as a first operation. Following the machine operation, processed castings should be placed on their transportation medium as a second step. This procedure eliminates several handlings and it should be followed in packing rooms, in inspection departments, and in similar operations. The elimination of multiple handling reduces time and expense. Mechanized handling also expedites the movement of materials to and from the operation, thereby making it possible for the machine operator to keep his machine in continual production because he is freed of the necessity of having to assist in the loading and unloading of supplies.

In piling and stacking operations, it should be remembered that when the stack is to be higher than a man's eye in order to utilize all available cubical space additional labor is required. The step-method of stacking usually is used when the operation is done manually because it conserves space, but it wastes time and manpower. This operation sometimes is justified as a temporary handling or storing expedient but rarely as a regular operation. If the operation cannot justify a pallet and fork truck system, then the use of a portable tiering machine for the lifting operation should be considered. Sometimes overhead cranes can be used, depending upon the physical characteristics of the building, the nature of the operation, and other considerations. However, be assured, there is some form of materials handling equipment available which is, or can be, adapted to your specific requirements.

In assembly operations, it is far easier to move the unit being assembled to the next operation than it is to move the material required in this second operation to the unit. This is a long established principle of materials handling and one that accounts for much of our success in mass production. This principle is applied in the building of automobiles, radios, refrigerators, washing machines, vacuum cleaners, electric toasters and similar appliances. It also is applied daily in our food industries, in canning and frozen food plants, in slaughter houses, beverage plants and in the cosmetic, soap, and other similar industries. The extent to which materials-handling equipment can be used in assembly operations depends upon the products, the number of assembly sta-

Automatic Drum Loader

Here is an automatic device for the easy handling of drums. The device, known as the Matic Grip Loader, can be operated with any size drums simultaneously, provided the drums have a minimum length of 26 in. and do not exceed a maximum length of 44 in. or are of the standard 55 gal. size. Any desired number of drums can be handled within the maximum capacity of the loader. The loader requires no hand operated controls to engage or discharge drums and it is unnecessary for drums to be exactly aligned. The loader has a safety device which makes it impossible to loose a drum by striking a hatch coaming or other immovable object. Loaders are equipped with fork lifting.



tions, the physical layout of the plant, etc. Usually such systems adapt existing equipment to specific requirements. When completed and in operation, they are found to comprise many makes and types of equipment which have been integrated and coordinated for the greatest possible efficiency of the system as a whole. Frequently such systems are not conceived of in their entirety at the time of original installation, but are adapted to meet changing conditions and requirements.

Regardless of the size and ramifications of a materials handling installation, we should always strive to make handling as direct and simple as possible. All unnecessary handling and back-hauling should be eliminated. Handling should be in as direct a line as possible. This does not necessarily mean a straight line but a forward movement of the process without overlapping or reverse movements. Here again, the principle of minimum handling is important. It has been said truly that "the best materials handling is no materials handling." In other words, eliminate handlings wherever possible. As long as we have production, storing, shipping, we will have materials handling and this phase of production and distribution is growing in importance daily.

Top executives more and more are realizing that the surest and quickest way to reduce costs is to eliminate unnecessary handling. A properly conceived materials handling system can conserve plant space, expedite the flow of materials and parts to and from production machinery and processes, speed up packing and loading for transportation.

No plant is too small to give thought to its materials handling operations. Now is the time to improve your methods and your equipment, and thereby to reduce your production and distribution costs.

DISTRIBUTION BRIEFS

A NEW WAREHOUSE . . . Transit Warehouse and Distributing Company, Joliet, Ill. Officials are James W. Faulkner, president, Herbert E. Schiek, secretary and treasurer and Leonard C. Schiek, vice president. They do merchandise storage and pool car distribution and also have a motor freight service operating to any point in the United States. Their 100 ft. x 200 ft. concrete and brick building is on the Rock Island Railway with siding space for four cars. Warehouse is completely palletized.

° ° °

NEW OFFICERS . . . The Industrial Traffic Assn. of San Francisco, comprised of traffic members of leading manufacturing and industrial concerns of San Francisco Bay area, has elected as president, Geo. S. Beach, traffic manager, Libby, McNeil & Libby, Fruits Div.; as vice president, Glenn T. Gleason, manager traffic department, Zellerbach Paper Co.; as secretary, A. F. Schumacher, Owens-Illinois Glass Co., San Francisco Div., and as treasurer, Jas. L. Roney, general traffic manager, S & W Fine Foods, Inc.

° ° °

A NEW DEPARTMENT . . . Ohio Equipment Co., Inc., Cleveland, O., has expanded its Mechanical Service Dept. to include James Cunningham with his complete factory trained knowledge of the company's line of materials handling equipment. The Service Dept. carries a stock of parts for any repairs or adjustments. This and mechanical service is available to all customers.

DARNELL CASTERS & E-Z ROLL WHEELS

Precision-made Darnell Casters with the DOUBLE BALL-BEARING SWIVEL assure a long life of efficient, economical service

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ulation that pallet loads, both in this country and overseas, must be of a certain height and weight. Labor representatives also stipulated that extra gangs be placed at the stringpiece to remove part of the load at that point before it was swung overside into the hold of the ship. This demand, which was not predicated on an over supply of available labor, was backed by the threat of strike during the critical days of national emergency when every effort was being made to speed the loading of ships in order to get vitally needed supplies to our overseas forces. In the face of threatened labor trouble, our army and navy officers capitulated.

Now, however, a more serious attempt at regulation is being made. This attempted regulation, if successful, would establish a dangerous precedent. The effect would be to seriously curtail handling installations and jeopardize the future of the materials handling industry and, in the long run, add tremendously to the cost of production and distribution and to the price of goods. As a result of an unwarranted attempt at regulation, the Quincy Market Cold Storage and Warehouse Co., Boston, recently experienced a strike that lasted several weeks. This strike was participated by a demand of the Longshoremen's Union (A. F. of L.) that the company supply in addition to the operator of a materials handling device, such as a fork truck or hand-controlled power pallet lift truck, a man to walk beside the equipment. This excessive demand meant that two men would be required to do work which could be done more easily and safely by one man. To accede to such a demand meant the establishment of a precedent of far-reaching potentialities. It was refused and the strike was called.

Let us discuss the union's contention that fork truck operation requires an additional man, first, for truck guidance in congested areas and during stacking and, secondly, to promote the safety of personnel. The union obviously has overlooked the fact that compared with the hazards of manual handling, safety is created rather than jeopardized by the use of mechanical handling devices. The union points to the possibility of material falling from the load while in transit or being knocked from the stack in storage and to the fact that equipment might run into and injure personnel. In this connection, we can ask the union what a man walking beside a fork truck could do to prevent any of these occurrences. Based on my own experience, I can picture circumstances in which the guide himself might end up a casualty. It has been definitely proved that the use of a man to guide a fork truck is more a hindrance than a help. He creates hazards not only for himself and the operator but for every one concerned. In addition, the likelihood of damaged merchandise is increased. A helper materially slows down an operator. This is understandable when it is realized that the orders he gives from his position would too often be contrary to the actions which the operator, in a different position, would deem necessary.

The installation of materials handling equipment is justified by management from several points of view: 1. It expedites the flow of materials and thus reduces the loading and unloading time of railroad cars, steamships, trucks, trailers, etc. Handling efficiency is required today more than ever before because of the freight car and other carrier shortages. 2. Materials handling equipment conserves space because it makes for easier stacking. 3. Mechanized handling reduces the man-hours per operation and the hazards incidental to fatigue. When handling devices are used the possibility of injuries such as hernia, broken fingers and other members, back fractures, and similar injuries, are materially reduced.

From the standpoint of the workers—and I believe that honest and intelligent workers, if not all unions, will agree—mechanical handling, in increasing our national productivity, creates rather than curtails employment. Demands of the kind made on the Quincy Co. indicate definitely that the union involved is not interested in the welfare of its members. It has carried these demands to the point of ridiculousness. If they are enforcible, there is no reason why the unions cannot demand that every operator of a motor vehicle on our highways have an assistant who will function as follows: When an intersection is reached, the operator of the vehicle will stop and the assistant will alight with a red flag and a flare. These he will place in the middle of the intersection, wave the operator across, pick up the red flag and the flare, get back into the vehicle which then will proceed to the next stop where the same motions will be repeated. Or, in order to avoid difficulty in congested areas, we might have a regulation requiring that every vehicle be proceeded by a man on horseback carrying a red flag somewhat similar to the regulation formerly enforced on the old west-side highway when the New York Central operated on West St. Some states, I believe, still have laws of this kind on their books. We might even have the unions regulate the speed of motor vehicles and trains.

If the union leaders are sincerely trying to help their membership, they should understand that materials handling devices are labor-aiding in every sense of the word and should work earnestly to have more of this equipment installed. From the short-range point of view, mechanical handling reduces the back breaking drudgery required in manual handling and increases the safety of operators. From the long-range point of view, mechanical handling increases national productivity and thereby increases employment. If the demands made on the Quincy Co. are enforcible, the warehouse industry and other in-

dustries will not be able to afford to install materials handling devices and this, in turn, will increase the costs to users of warehouses and shipping services.

All industries should be interested in the Quincy case which is now being arbitrated. Pending the outcome of this arbitration, the men have returned to their jobs. At this writing the situation is as follows:

1. The union's demand that two men be assigned to each power hand pallet truck and each fork truck has been submitted to arbitration.
2. The decision of the board of arbitration will become effective as of Jan. 1, 1948.
3. During the arbitration period, *two men* will be assigned to each powered hand pallet truck.
4. During the arbitration period *one man* will be assigned to each fork lift truck.

The company has agreed to adjudication on the above conditions in order to get back into operation and to save millions of dollars worth of perishable goods which have been tied up by the strike. The mere fact that the union also agreed to the conditions of the truce conclusively proves that it is inconsistent in its demands regarding safety measures. Here we have the anomalous situation of one man on the large power-operated fork life truck while *two men* are used on the small-non-lifting, powered hand pallet trucks. This fact would indicate that there is more interest on the part of the union in making jobs for additional men than in the actual safety of the operators.

The writer can remember one installation where plenty of men were used. This installation is illustrated in the accompanying photograph. Obviously, the operation is hazardous. A high lift truck is being used as a tiering machine without skids and, *five men* are employed in stacking. Any one of the men, other than the operator, could be hurled by the lift truck into the stack. The position of the man standing on the platform is particularly hazardous since he might, while juggling packages over the platform, step off and be injured. Insofar as efficiency is concerned, the fork lift truck, costing more than $8,000, and its operator might just as well be eliminated and the entire operation accomplished manually by having the men pass packages to be stacked from one step to the next. Five men could do this stacking job almost as fast as it is being done in our illustration but it would require heavy manual labor on their part and less loafing time.

Those who are interested in the future of materials handling should follow the Quincy case and should prepare themselves to meet other union attempts of this kind.

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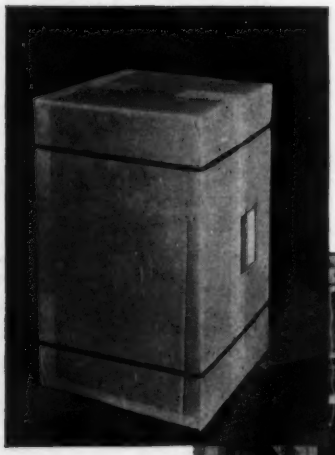
If you were to sit through a laboratory impact test which scientifically simulates the ordinary rough handling of freight, you would have a convincing demonstration of the common sense of strapping.

IN A large laboratory devoted to research and testing of shipping containers, two wooden boxes were being subjected to all of the jolts, falls and other abuses to which shipments ordinarily are subjected. These boxes were made of boards of the same size and quality. They were identical in other respects, the number of boards used in each were the same, the size and spacing of nails were similar, and each box held the same quantity of tinned units (one pound). There was however, one difference. One box was strapped; the other was not. After the twentieth drop, the impact of which was comparable to that of a drop from a truck's tailboard onto a platform, things began to happen to both boxes. (Keep in mind the fact that these impact tests scientifically simulated only ordinary rough handling of shipments). Nails loosened, rigidity was lost and distortion set in. But here the similarity in effect ceased. With each tumble the unstrapped box continued to weave and lose nails. After a total of only 30 falls, the nailing in one side gave way completely and contents spilled out. Here we have a 100 percent box failure.

With the strapped box (incidentally, the strapping was no more than usual for the type and weight of box used, i.e., two girthwise straps a few inches in from the ends of a rectangular box) the story of resistance to shock and security to contents, had just begun. After 40, 50, 75 and 100 falls the strapped box was still intact. The tests continued. . . . 120, 130, 140 drops . . . now there wasn't a nail left in place; still there was a self-contained, deliverable shipment.

If all shipping men could sit through such a test and see this graphic demonstration of how a properly strapped shipping unit can withstand five times the punishment an unstrapped unit can withstand, we would never again hear the question, "What's the sense in strapping?"

There are two types of strapping: round wire strapping and



Flat steel strapping gives shipping protection.
Photo: Signode Steel Strapping Co.

Daybeds reinforced with No. 16 ga. galvanized round steel straps.
Photo: The Gerrard Co., Inc.

Damage resistance is multiplied by proper strapping.
Photo: Signode Steel Strapping Co.

COMMON SENSE OF STRAPPING

By CHARLES L. SAPERSTEIN
Packaging Consultant

several systems of flat metal band strapping. Both types are available in various gauges, weight and tensile strength depending upon the weight and stress of the shipping unit. Both round and flat wire methods of strapping have their advocates because each method has merit. Government and standard shipping regulations accept either type, providing it is of adequate gauge for the job it has to do. Round wire strapping is tensioned and locked by the intertwisting of the two ends and cut. This is accomplished in one operation of the strapping machine. Flat band strapping is secured after tensioning by an additional metal seal which is crimped through to lock the two ends of the band. While there are automatic machines which both tension and seal, flat band strapping usually is performed by the use of separate machines, first the stretcher and then the sealer or crimper. In fact, a third instrument, the cutter, is needed to complete the strapper's tools when the larger, heavier flat bands (¾ in. to 2 in.) are used.

The efficiency of strapping is increased when in addition to tensioning the straps are nailed or stapled. Strapping should be drawn tightly enough to cut the edges of the box to prevent slipping of the straps. If only one strap is used, it is applied at the center of the box; if two straps are used, the distance between the straps and the ends of the box should be approximately one-sixth the length of the box. On cleated plywood or fibreboard boxes, strapping should be applied over the edge cleats as well as intermediate cleats. Because of the proximity to the edges of the box, stapling is recommended.

Strapping should be performed just before shipping as such factors as shrinkage of box lumber, stretching or twisting of straps and possible breakage during warehousing operations may occur when strapping is performed considerably in advance of shipping. Where tightness of strapping has been affected because of wood shrinkage or other causes, cargo should be restrapped. Often, a third strap, placed lengthwise, will recover the security which has been lost because of lumber shrinkage or other causes.

An important consideration in strapping, often overlooked, is the permissible thickness of lumber in boxes or the test weight in the case of other containers, may be safely reduced as much as 20 to 35 percent. In a production line operation the economies which may be effected as a result of strapped over non-strapped shipping units can be great enough to more than offset the overall cost of the material and labor involved in strapping. In addition, a much more efficient shipping case is obtained.

In order for strapping to be of maximum value, it is necessary to select the proper size bands to do the job adequately. Two tables are printed, one for flat band wire boxes up to 1,000 lbs. and the other for round wire. This is extremely important information, and those concerned with packing and shipping will find these tables a handy reference when deciding the number and weight of straps to be applied.

Strapping accessories are a necessary part of the materials handling equipment of warehouses, and terminals. When it is necessary to open containers for inspection or in order to verify the security of a container type, it is grossly unfair to the shipper to reclose such containers and not replace any cut straps.

Another frequently occurring situation is due to the fact that when freight is to be transferred from one carrier to another, the second carrier may refuse to accept unstrapped containers.

For example, a lot of merchandise in cartons for domestic movement is suddenly wanted for export. The warehouse or forwarder who is equipped to meet strapping requirements is performing a real service to shippers and to distribution.

More important, however, than specific strapping assignments, the general policing of strapping and the maintenance of existing strapping in good, serviceable condi-

A unit load of oil drums strapped with high tensile No. 8 ga. wire.
Photo: The Gerrard Co., Inc.

tion deserve active consideration in all materials handling operations. Straps will break in handling. In sheering one box along side another, the strapping may catch and be snagged apart. Out of one hundred cases, uniform in every respect, two or three, perhaps more, may reveal broken straps at each unloading operation.

It is of course, possible to take the attitude that it is no responsibility or concern of the freight handling agency. An efficient operation takes a rather progressive viewpoint. The occasional broken strap repaired now is the prevention of damage and freight claims later on. The availability of strappers with tools for each size strap which may be required becomes an indispensable rule wherever freight in shipping containers is to be handled.

The uses of strapping is not confined merely to boxes and cartons. Bales and bundles depend upon the wire for proper conformity. Thousands of shipping units are created through the ability of strapping to form an acceptable load. Steel rods, sheet metal, paper stock, lumber, pipe, castings and fittings, just to name a few, can be packed in this manner. Palletized loads are created with the aid of strapping plus a base. Blocking and bracing of heavy loads has been simplifiedt and made more secure through the use of heavy steel strapping. Floating loads are created by bands locking together the contents of a railway car or truck.

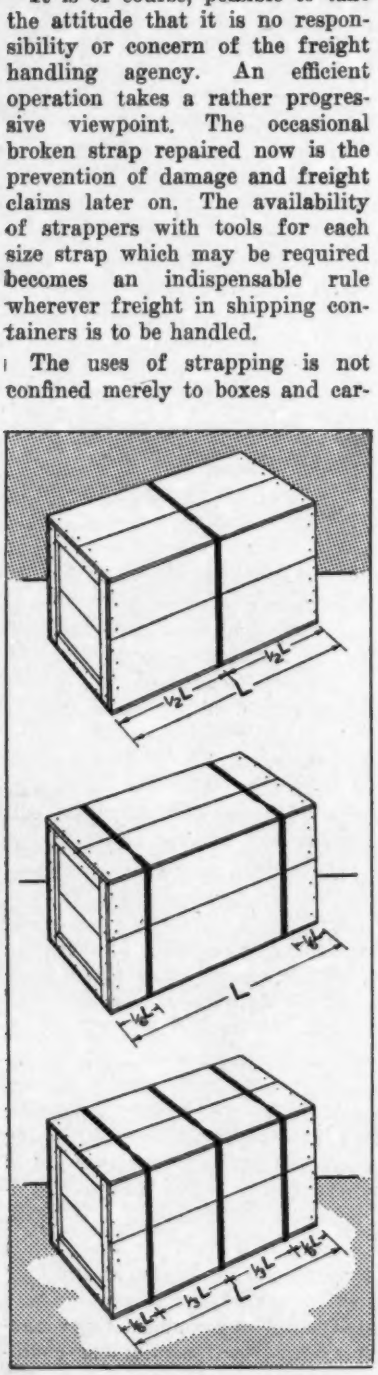
The strapper or strapping crew soon finds itself in demand for all sorts of assignments at any sizable distribution center. To be without this convenience is as serious as trying to handle without fork lift equipment.

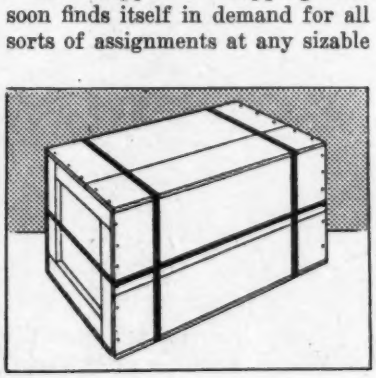
Sizes of Flat Metal Bands for Various Weights of Boxes

Maximum gross weight	Dimensions of flat metal bands, when different numbers of bands are used		
	1 band (inches)	2 bands (inches)	3 or more bands (inches)
Up to 70	3/8 x 0.020	3/8 x 0.020	3/8 x 0.020
Over 70 to 125	1/2 x .020	3/8 x .020	3/8 x .020
Over 125 to 175		1/2 x .020	3/8 x .020
Over 175 to 250		5/8 x .020	1/2 x .020
Over 250 to 400		3/4 x .020	5/8 x .020
Over 400 to 600		3/4 x .023	3/4 x .020
Over 600 to 1,000			3/4 x .023

Gage of Round Wire for Various Weights of Boxes

Gross weight (pounds)	1 wire		2 wires		3 or more wires	
	100,000 lb. per sq. in. tensile strength (gage)	140,000 lb. per sq. in. tensile strength (gage)	100,000 lb. per sq. in. tensile strength (gage)	140,000 lb. per sq. in. tensile strength (gage)	100,000 lb. per sq. in. tensile strength (gage)	140,000 lb. per sq. in. tensile strength (gage)
Up to 70	14	15	15	15	15	15
Over 70 to 125	13	14	14	15	15	15
Over 125 to 175			13	14	14	15
Over 175 to 250			13	13	14	15
Over 250 to 400			13	13	13	14
Over 400 to 600			12	12½	12	13
Over 600 to 1,000					12	12½





LETTERS

(*Continued from Page* 20)

required to obtain an attorney to represent them, who would have to depend on the knowledge of traffic managers for exact information in each case.

We therefore urge that you vote against this bill when it comes up for passage.

—Sol D. Wilk, Secretary, Alumni Assn. of Traffic Mgrs. Institute of N. Y.

o o o

Easy Reading

Sir:

May I have a copy of the article entitled "The Railroad Uniform Bill of Lading" which appeared in your Dec., 1945 issue.

I like the new way that Mr. Elwell writes his articles. The story form makes it easier to read and seems to put his points across better.

—C. J. Blaker, Traffic Manager, Hazard Insulated Wire Works, Div. of the Okonite Co., Wilkes-Barre, Pa.

The August issue of DISTRIBUTION Age will feature Highway Transportation.

MORE PROFITS

(*Continued from Page* 59)

Clark Thompson, National Industrial Conference Board, Inc., said, in part, "One of the weakest links in most marketing research departments is the follow-through system. The department has an obligation to see that the results of its work—its reports and recommendations—are translated into action. The execution of recommendations is, of course, a function of the company's line officers, but the marketing research department should be able to instill sufficient interest, confidence and conviction in the line officers to induce them to use the research reports.

"There are a number of good ways of insuring the use of research findings. To this end some marketing research departments rely on informal methods, such as personal contact. Others have used mechanical systems. Actually a combination of both types of follow-through seems most effective, but the relative effectiveness of each will be largely influenced by the personalities with which the department must deal.

"Insuring the cooperation of management in the use of research findings as well as in encouraging the general acceptance of marketing research, a knowledge of psychology is a valuable asset to the manager of marketing research. An executive can be made to accept a critical report if it is presented to him at the right time and and in the right manner. Timing is always an important factor in gaining the interest of executives in any report. If a report reaches an executive at a time when he is actually thinking of worrying about the problem in question, the report will be of far more interest than if it is presented when he is deeply involved in other unrelated matters."

Is it suggested that a responsible staff officer emulate the antics of a worried parent trying to make an unwilling child take a dose of castor oil, in order to have his work accepted? The spectacle of a manager of marketing research hovering anxiously around the office of a line executive, ask-

(*Continued on Page* 82)

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4. The Southern Railway serving the southern counties of England south of London.

A special Tribunal was created with powers to approve plans of amalgamation and to prescribe compulsory consolidation if voluntary action was not agreed upon by the carriers. The negotiations were completed late in 1922, and the four amalgamated systems were created by Orders of the Amalgamation Tribunal effective Jan. 1, 1923. The capitalization of the former railways was reduced by approximately £150,000,000, giving the amalgamated systems a capitalization of about £100,000,000.

The Railway Rates Tribunal was created by the Railways Act, 1921, to exercise jurisdiction over railway rates and charges.

During World War II the railways of Great Britain and the London Passenger Transport Board were taken under the control of the national Government by Order issued under the Emergency Defense Powers Act, 1939. This control was to be continued for at least one year after the termination of hostilities. The railways and L. P. T. B. were compensated by fixed annual payments.

In 1933 the London Passenger Transport Act provided for the integration of the underground railways, tramways, motor busses, and suburban railways serving Metropolitan London into a public trust enterprise in which the private capital and public bodies were represented. The owners of the securities of the integrated transport facilities received in exchange for their corporate securities various classes of securities of the newly created London Passenger Transport Board.

The first post-war General Elections in Great Britain were held July 26, 1945. In these elections 394 Labour Party representatives and independent labour members were elected to Parliament. The Conservatives won 190 seats and the Liberal Party seated only 25 members. The Labour Party and independent labour membership comprises 398 of the total membership of 640 in Parliament, almost ⅝ of the total voting strength.

For many years British railway labour unions have demanded the nationalization of railways. These demands unquestionably had a powerful effect upon the Trade Union Congress. In 1945 Transport House, the headquarters of the Labour Party, issued a report strongly urging the establishment of a National Transport Authority, and the coordination of railway, road, waterway and air transport under national operation.

The decisive nature of the victory of the Labour Party, involving the reduction of Conservative Membership in the House of Commons to 190 Members, and of the Liberal Party to a mere 25 Members, indicates the strength of the support of the Government's program of nationalization.

The British Transport Bill providing for the nationalization of railways, intercity road transport, canal, and other transport facilities, was introduced by Alfred Barnes, the Minister of Transport, and supported as a government-sponsored measure.

The Transport Bill provides for the taking over on Jan. 1, 1948 of all of the transportation enterprises subject to the bill for public ownership and operation. Air transportation is not included in the arrangement because the airlines are already amalgamated in a chosen instrument, the British Overseas Airways Corporation, a public corporation. The bill enumerates 60 railways including the four major railway systems, the several jointly operated railway lines, terminal and short lines, 18 canal and inland waterway undertakings, and all intercity road transport enterprises. Industrial plant facilities are excluded as are road transport vehicles hauling liquids in bulk in tank-trucks, livestock, meats, heavy indivisible loads, or household goods. Coastwise water transportation is not to be included in the take-over, although all inland waterway and canal undertakings are to be included.

The railways, canal operations, road transport, passenger transportation operations now conducted by the London Passenger Transport Board, docks and harbor facilities, and auxiliary facilities owned by the enterprises taken over such as hotels and warehouses are included in the compulsory acquisition.

The Transport Bill provides for the management of the transport system by a British Transport Commission of five members. The Minister of Transport is instructed to give the Transport Com. direction in matters affecting the public interest. The commission is responsible directly to Parliament.

The Bill provides for a Railways Executive, a Docks and Inland Waterways Executive, a Road Transport Executive, and a London Passenger Transport Executive to manage these parts of the transport system. Provision is made for the organization of a Hotels Executive to be set up on the "appointed day" to be fixed in the future by the Commission.

A Central Transport Consultative Committee and Area Consultative Committee are to be organized. In these committees, agriculture, commerce, industry, labor and local governments are to be represented. The chairmen and members of these committees are to be nominated by the British Transport Commission, and appointed by the Minister of Transport.

After the Appointed Day licenses to operate road transport vehicles will not be issued for transportation of goods by carrier or private vehicles for distance of more than 25 miles in one operator's vehicles or over 40 miles in joint service, without special authority from the Licensing Authorities.

Separate bodies may be organized and licensed to operate "Area Schemes" of transportation under

the direction of the Executives and the Commission.

The Bill provides that the owners of the transport properties or securities acquired are to be compensated in one of several ways. The owners of the securities of railways and canal undertakings are to be compensated on the basis of the average market value of securities determined by transactions on the London Stock Exchange on the dates fixed in the Bill, several days in Nov., 1946. The owners of local transportation undertakings are to be paid on the basis of amounts necessary to cover interest and sinking fund charges on outstanding debts. The owners of privately-owned railway wagons or cars are to be paid on the basis of the value of the equipment—considering its age, condition and original cost. The proprietors of road haulage undertakings are to be compensated on the basis of the net value of the assets of the businesses plus severance compensation.

The payments are to be made in British Transport Stock, except road transport operators or private railway wagon owners whose compensation is to be £2,000 or less may be paid in cash.

Provision is made in the bill for the creation of a Transport Arbitration Tribunal of four members to be set up to settle disputes with respect to the acquisition. The present Railway Rates Tribunal is to be transformed into the Transport Tribunal with jurisdiction over all transport rates and charges. A Coastal Shipping Advisory Committee is provided for to maintain liaison between the British Transport Com. and the coastal shipping undertakings which are not otherwise subject to the bill.

Arrangements are provided for wages, working conditions, pensions and displacement compensation for employees. The Transport Com. is required to act in such matters with the advice of the Minister of Labour and the National Service.

The British Transport Commission is authorized by the bill to issue necessary stock; to borrow up to £250,000,000 with the approval of the Minister of Transport and approval of the Treasury; and to float temporary loans not to exceed £25,000,000. The securities so issued are to be guaranteed by the Treasury and to be charged to the British Consolidated Funds.

The best available estimate of the cost of acquisition of the railways, inland waterway and canal projects, and London Passenger Transport Board properties, but excluding all other properties such as road transport, private cars or wagons, and miscellaneous property, the acquisition value of which it is impossible at this tme to estimate, is over £1,000,000,000. Considering the price to be paid for railway securities and the interest rate payable on the British Transport stock, railway investors will get about half of the value of their security holdings. About 1,500,000 persons, over six percent of the total working force of Great Britain, will be taken over into public employment.

The debates in Parliament at the second reading of the Transport Bill indicate the force of the support and opposition. The Government's arguments in support of the bill indicate the determination of the Labour Party to achieve this major objective in its program. The government's case is based upon several different but related arguments. It urges that the supply of capital available to rehabilitate British industries and facilities after the destruction and abuse of war is limited and most be rationed by the Government among the industries most necessary to reconstruction, and not bid for by competing industries. The railroads and other transport facilities, particularly port and harbor facilities, it states, have been badly damaged and need large sums for rehabilitation for post war service. The Government asserts that the railroads are not able to finance this rehabilitation program and that the port and harbor enterprises are unable to attract sufficient private capital because of the unattractive financial return in such projects. The British railways deny vehemently that they are unprepared to fi-

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nance their own rehabilitation programs.

The British railways before World War II were harassed by motor truck and bus competition and the Government argues that they would be unable to compete effectively with the road transport enterprises in the present post-war period. The British railways argue that the remedy for this condition is the more effective regulation of road transport, not the public ownership of rail and road transportation facilities.

The railway employes have for many years demanded the ownership and operation of railways, and have urged that the step be taken now because the Labour Government should be an ideal employer.

The Government argues that the nationalization of transport enterprises is consistent with the objectives of the Labour Party to nationalize other basic industries and utilities, and it would be inconsistent for a Socialist government to allow key industries such as the transportation enterprises to be privately owned and operated.

The Minister of Transport, Mr. Alfred Barnes, rejected a demand filed by the railway and the road haulage industries for a public inquiry on the subject of nationalization before proceeding with the presentation of the bill in Parliament.

Hugh Dalton, Chancellor of the Exchequer, in supporting the passage of the bill stated that the railways were a sorry bag of assets and that their revenues were declining rapidly. He stated that if the Government "allowed the full blast of road transport competition to blow upon the railway system which had been sheltered by legislative and administrative action, they would be totally bankrupt within a few years."

Herbert Morrison, Lord President of the Council, and formerly Minister of Transport, speaking in support of the bill stated that the proposed British Transport Com. would be able from the outset to concentrate on "sheer efficiency," due to the "abundance of cheap capital" and would be able to "undertake a bold and considered program of transport development without undue bureaucracy or over-centralization which would be impossible under private enterprise."

It is significant to shippers that little or no attempt was made by spokesmen of the government in supporting the Transport Bill to advocate nationalization on the ground that a publically-owned and operated transportation system would provide the traders or shippers with a superior transportation service at lower costs than could be provided by privately-owned and operated enterprises.

The opposition to the bill comes from several quarters. Spokesmen of the security owners, institutional and individual, protest the reduced principal sums and interest to be paid upon their holdings in railway securities. Among others, the Archbishop of Canterbury, as Primate of the Church of England, has protested the compensation which will have the effect of reducing materially the income from railway securities available for the support of Church of England activities. The Council of the London Stock Exchange has protested to the Chancellor of the Exchequer the basis of compensation to be paid for railway securities on the ground that Stock Exchange quotations on the dates selected as the basis of compensation were "peculiarly unsuitable as a reference basis for British railway securities" because of the uncertainties and fears surrounding the securities market. The Council suggested arbitration as the proper basis for compensation.

The railway company managements protest their removal without having been given an opportunity to demonstrate their capacity to rehabilitate their properties in the post-war period. Sir Ronald Matthews, Chairman of the London and Northeastern Railway in discussing the Bill at the General Meeting of the company said, in part:

> "The older generation suffers from a deep and legitimate feeling of gross unjustice when they compare the reductions in income with the rise in wages and decreased purchasing power of money. The younger generation, burning with the spirit of enterprise and adventure see before them a life of drab and weary frustration, of endless and irritating controls!
>
> "A sacrifice which will avail nothing is the pouring of the blood of industry on the dreary alter of Karl Marx."

Spokesmen for the goods motor road haulage industry have vigorously opposed nationalization. H. T. Dutfield, Chairman, Road Haulage Assn., and C. H. Newton, General Managers' Conference, Railway Clearing House, in a joint communication to *Railway Gazette*, stress that two questions are at issue in nationalization: state or private enterprise, and large or small units. They emphasize that the Royal Com. in 1931 found it impossible to make any definite recommendations for unification, and in 1937 the Transport Advisory Council reported that the "best line of approach to achieve coordination is to aim at securing for traders adequate alternative facilities, care being taken that the resulting competition is on fair terms" and that "any attempt to decide that certain goods should go by certain means of transport would be impracticable."

Shippers object that Government ownership denies them the freedom of choice of transport facilities. They object also that the bill denies them their right to carry their own goods in their own vehicles. It destroys the right and opportunity of reward for efficient operation which, under a private competitive system, is passed along to users. They object also that the bill restricts the right of entry into transport businesses in times of high production needed to insure traders adequate services and proper rates. Once nationalized, it is difficult, if not impossible, to change the policy and revert to private ownership and operation.

Ernest Short, in a recently published book, *Railways and the State*, states that the interests of the public in the ownership and operation of transport facilities are paramount, and that national-

ization can be justified only if it yields the advantages of:

1. Increased efficiency.
2. Lower charges for comparable services.
3. Improved pay and better conditions for workers.
4. Provisions for adequate expenditures for new development.

Sir David Maxwell, a Conservative Party Member of Parliament, in the Parliamentary debates argued that the bill destroys all incentives to improved service and efficiency and sets up Ministerial control in their stead.

The Opposition points out that the railways earned the Government a profit of £221,000,000 during the period of war control in excess of the fixed sums paid them under the Railway Control Agreement, despite the prohibition to increase charges commensurate with cost during the war.

Modern Transport, a leading British Transportation journal, refers to the program as "Bureaucracy in Excelsis."

Sir Henry Clay, Warden of Nuffield College, Oxford, and for many years Economic Adviser to the Bank of England, points out an inherent weakness in the nationalization of industry. He states that "the socialist experiment being carried on in England today has found itself faced with this problem; it seeks to avoid detailed political direction of the industries it is socializing, to preserve the autonomy of their management in choosing methods, regulating costs, and fixing prices, while imposing some real political control to justify the change it is making.

"The general device adopted is to entrust the administration of each industry to an independent board or commission, appointed for a term of years and requiring to operate on commercial lines. But in every case it has been found necessary, if the political object of nationalization is to be assured, to reserve for the Minister responsible to Parliament the power to issue 'directions' to the board or commission, which will supersede its autonomous discretion. . . .

"The unfortunate administrator has to serve two masters—the mar-

(*Continued on Page* 83)

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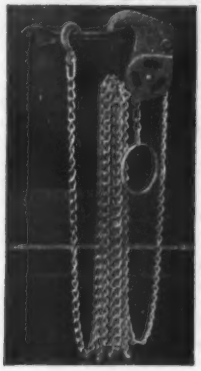

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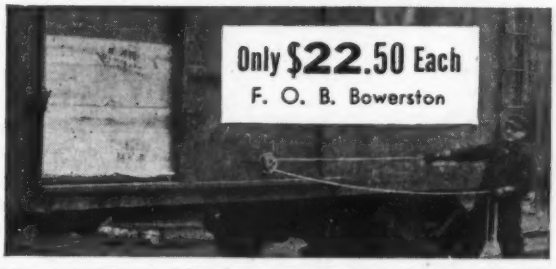

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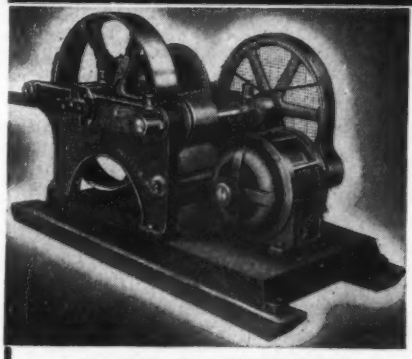


In 3 capacities, 500 to 1500 pounds, Mason Whip Hoists can be preset for speeds varying from 75 to 400 feet per minute.

Write for details and prices—see how easily-installed Mason Whip Hoists can help solve your hoisting problems.

Here is a hoist that lifts baled, bagged, boxed or tied merchandise—as much as 1500 pounds as high as 50 feet in as little as 10 seconds . . . higher lifts proportionately.

At only a fraction of the installation and operating costs of other types of equipment, Mason Whip Hoists use outside space or small hatchways, lift loads quickly and safely, and can be operated by any workman. Two men can shift loads directly from truck or car to storage floors, handling as much as 90 units per hour. Mounted in a penthouse, on a storage floor or suspended from the ceiling, Mason Whip Hoists save space, time and labor—handle bulky loads easier and faster.

REPAIR PARTS FOR MASON WHIP HOISTS AVAILABLE

PAWTUCKET MANUFACTURING COMPANY
327 PINE STREET, PAWTUCKET, R. I.

OIL DRUMS—(*Continued from Page* 36)

not palletized. As the drums come off the conveyor, a Colson drum truck, with a minimum of time and effort, places four drums on each pallet. The loaded pallets are then picked up by a manually operated Lyon hydraulic pallet type lift truck and moved away from the filling area. Once out of the filling area, they are picked up by a Clark gasoline powered, high, telescopic, fork truck and taken to storage.

The blending plant supplies the filling meters. Here the various types of blended and compounded oils are equipped with separate manifolds, lines and pumps to insure uncontaminated products. Bulk shipments and receipts by water, rail or truck are also accomplished by the facilities of the blending plant.

An analysis of the old and new methods shows the points at which efficiencies have been effected. Time comparisons stress the value of integrated handling. All drums were formerly reconditioned by outside concerns. The installation of the new unit at Tide Water's San Pedro Lube Oil Terminal not only resulted in a substantial saving, but made the company's clean drum supply more secure. The old method of drum filling required the operator to up-end the drum from the floor and place it in position for filling, using a regular line meter with a delivery counter attached. This had to be reset for each drum filled. About 25 drums per hour were filled by each meter. Using the new arrangement, drum filling capacity has been doubled. An average of 50 drums per hour are filled by each meter and can be palletized or trucked away. No increase in manpower is involved.

In the shipping and receiving phases, unloading and loading of box cars and trucks was for the most part accomplished manually, even to the placement and removal of double decked loads by skids. Inasmuch as all sizes of packaged products are now loaded or unloaded in unit loads directly upon pallets, the use of the fork lift truck has reduced the time previously required as much as one half.

In the stencilling process, drums were removed from storage piles and arranged in rows. They were inspected with an ordinary light on a long extension cord and stencilled with spray guns attached to long air hoses. This required dragging both extension cord and air hose around on the floor. After stencilling, the drums were then placed on tracks and rolled on their sides to the filling area. An average of 20 drums per hour, per man, were prepared by this method in comparison to 100 drums per hour, per man, using the new streamlined arrangement of roller conveyers. Results of the new system . . . time saved, space saved, and the elimination of excessive handling.

Storage, too, has been considerably influenced by the introduction of mechanical handling equipment. When formerly received inside the warehouse, various grades and sizes of packaged products, cases, and cartons were stacked manually in segregated piles usually not over six feet high.

(*Continued on Page* 89)

MORE PROFITS—(*Continued from Page* 77)

ing his secretary for bulletins on his state of mind, or consulting an oracle for the propitious moment to enter the inner sanctum with fear and trembling is too typical of current practice to be funny. The fact is that no research should even be contemplated unless the line executive who is going to use it has played a material part in planning it. When that report is finished he will be impatient to see it. Why? Because it's partly his "baby" and, by a process of subjective rationalization peculiar to many line executives, he will have convinced himself that he is chiefly responsible for it.

In a well integrated organization under the direction of a distribution controller there can be no such wasting of valuable time and energy in pussy-footing and using so-called psychology to spring a report on a busy man. If there are serious differences of opinion, the distribution controller, who speaks both languages, can bring the men to the common viewpoint and effect a satisfactory compromise which they may never reach alone. Alert staff officers must constantly check the work of line departments. It is part of their job to ask embarassing questions like:

"How do you do it?"
"Why do you do it that way?"
"Is that the best way?"
"How do you know it's the best way?" etc.

Because fruitful staff work will infiltrate into every activity it must be integrated within itself to prevent duplication and confusion. For that reason all of it should be under the direction of the distribution controller who is also the voice of the staff in top management councils. An arrangement such as this gives the staff the benefit of a hearing in high court without the recurring compulsion of taking time out to "sell" ideas to line executives. It allows them full time to do what they were hired for in the first place—their own specialties.

Finished work will flow from the staff, through the distribution controller to the line officer for interpretation and execution. In a well integrated organization there can never be a question of "selling" a report. Whatever selling was needed would have been done in the planning conference. No staff work should ever be started unless the line function concerned was in full accord with its purpose. Apparently it takes an unusually high degree of managerial acumen to understand the functions and potential value in cold cash, of good staff work and the further importance of getting the most out of it when it is done. Distribution, because it has rarely been unified, is, perhaps, the worst offender. It is likely that this failure to evaluate and utilize staff work to its limit is one of the fundamental reasons for its relative inefficiency.

BRITAIN'S PROGRAM

(*Continued from Page* 81)

ket because he operated in a market economy, and the minister who appoints him. I fear confusion and conservatism as a result of this divided responsibility. The issues of industrial management are not the kind of decisions which are suitable for political discussions: they are matters of technique or occasions for market judgment, not decisions which turn on the application of high political or morale principles. They need to be safeguarded in a separate and specialized organization; if they are brought within the compass of governmental action, it is difficult . . . to segregate them and ensure that they are settled by relevant considerations of cost and demand, not by irrelevant considerations of political expediency, even if camouflaged by plentiful use of the word 'reasonable'."[1]

The government has been subjected to vigorous opposition and severe criticism directed against the Transport Bill, not only in Parliament, but in the trade press as well. In addition to the comments already cited, *Railway Gazette* charges that the nationalisers "have not thought out the questions at issue in a thorough manner" and are "prone to snatch at any plausible argument which favors their cause."

Lt. Col. Cuthbert Headlam, a Conservative Member of Parliament, charged that the Labour Members of Parliament were obsessed with the "fetish of government ownership and improvisation."

[1] *The Conditions of Industrial Progress*, Jan. 10, 1947.

Coming Events

GLUED UNIT LOADS . . . Publication of the progressive report from the laboratories of a leading adhesive manufacturer scheduled for this issue has been delayed until next month as the report has not yet been completed.

ROUSTABOUT CRANES

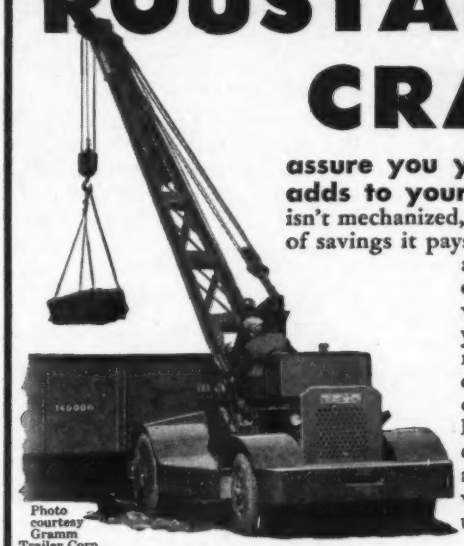


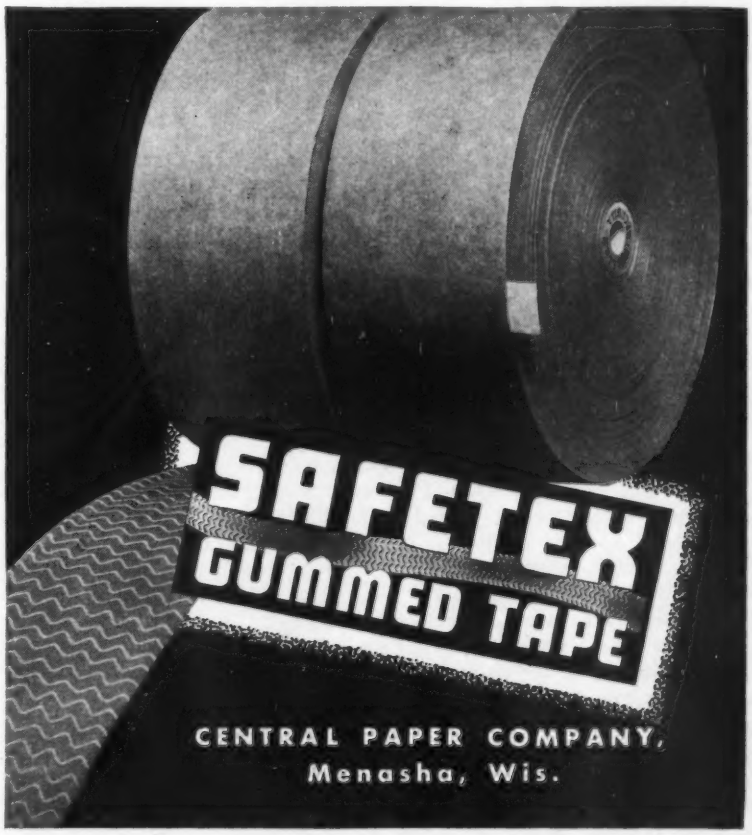
Photo courtesy Gramm Trailer Corp., Delphos, O.

assure you yard efficiency that adds to your profits. If your yard isn't mechanized, it's probably a gold mine of savings it pays you to dig into. Winter and summer, indoors but especially out, rugged, versatile Roustabouts save you time, manpower and money — prevent costly delays and expensive handling. Hook or magnet loads to 7½ tons — modernly engineered for fast action and years of overwork; ask hundreds of users. Write for the facts!

THE HUGHES-KEENAN COMPANY
611 NEWMAN STREET . . . MANSFIELD, OHIO

ROUSTABOUT CRANE

Roustabout Cranes
By Hughes-Keenan
Load-Handling Specialists Since 1904



TRANSPORTATION—(*Continued from Page 67*)

Standards activities do not go farther than recommending the use of this size pallet.

Joint operations of the type we now are considering and which have proved financially successful include the activities of the Milwaukee Electric Rail and Light Co., the Acme Fast Freight, Inc. and, in particular, those of the Cincinnati Motor Terminal Co. where the B. F. Fitch container was developed. This container has been used with great success in the milk business between New York and Albany. Since it is of very simple construction, this container is easily adaptable for use on board the New American Clipper.

The motor carriers are building 24 ft. semi-trailers at a faster rate than the railroads are building box cars, and they seem to be getting most of the business for hauls up to 200 miles. With this competition staring the railroads in the face, Mr. Young and his Federation for Railway Progress must some day examine the capital cost of modernizing our freight cars. Doubtless he will find that such a program, over the years, will not cost as much as a superficial examination may indicate. Present rail car ownership amounts to about 2,250,000 cars, of which one half are box cars. An average service life of 20 years for each would indicate that replacements are required at the rate of about 100,000 box cars per annum.

Because of the depression in the thirties and the war, this obligation to replace obsolete equipment has been deferred with the result that there is now an accrued liability which must be faced. But aside from considerations of obsolescence, each new car equipped with twin Keystone containers would be the equivalent of two cars of the present type. This fact would tend to reduce maintenance charges traceable to time by one-half (without considering other economies resulting from lighter weight and greater versatility). Furthermore, there are many thousands of flat and low sided gondola cars, the latter having little present utility. For a reasonable expenditure these cars too can be converted into container cars with a capacity equivalent to about 140,000 box cars.

The research division of the General Motors Co. has just completed the last word in Diesel powered streamlined trains for railroad passengers to look at. If similar attention was given to the mass production of Diesels for the New American Clipper and to the production of Keystone containers in which to ship automobiles, tractors and other products at home and abroad a greater service would be rendered stockholders and distributors. It is the hope of the writer that when the suggestions made in this and other articles in his series are understood and taken to heart that something constructive will happen in the transport world.

(Next Month: Modernized Freight Terminal Design)

WAREHOUSE DESIGN—(*Continued from Page 44*)

required 60 man hours. This is not surprising when it is realized that the cases were rehandled six times and restacked three times as compared to the present requirement of two handlings and one stacking.

Lightweight magnesium dock boards are now used for both truck and car unloading. These are not only much lighter to handle, but are also properly engineered for safety and for load stress. They are more efficient than the heavy gauge steel sheets and planking formerly used.

Merchandise is checked from the carrier on to pallets and these are moved by manually operated pallet trucks to the rear of the receiving platform, a distance of about 30 ft. From this point, electric fork trucks pick up the pallets and move them to their final destination in the warehouse, where they are either placed on the floor or tiered. The warehouse covers the entire first floor of the building. All movement of materials is on a horizontal plane.

In the old building, with six different storing locations, materials had to be moved in both horizontal and vertical directions by hand and elevator. Skids were loaded at the dock and manually pulled by lift trucks to the elevator. The skids were then rehandled on and off the elevator and when they arrived at their destination the goods were stacked in place.

The greatest saving in this phase of the operation is time. And time, of course, represents dollars and cents in overall operation. At Brunswig's new plant, merchandise which is received during the day is on the shelf, ready for sale, in less than four hours. In the past, it was at least a full 24 hours before the same job was accomplished.

Merchandise goes up to the order filling department on the second floor on one of six rough top belt conveyors, or is picked up by an order clerk on a flat-bed electric truck if it is to be shipped as a full case. These trucks haul two trailers at a time if needed. In the old location, full case merchandise was loaded on four-wheel push trucks and manually hauled to the order floor. Full cases were loaded on skids, hauled to the elevator, carried down, or up to the main floor and again hauled to the shipping platform.

As the orders are completed on the second floor, they are now packed for shipment and placed on a belt conveyor which runs between a double line of packers. The case moves by gravity on roller conveyors over a scale where the weight is marked on the case. The scale man pushes the case over a "ball table" in one of three directions, which automatically separates cases on the shipping platform below into three categories . . . "Will Call," "City Delivery" and "County Delivery." This is done by means of two spiral chutes and one sloping chute connecting a decline belt and gravity conveyors. In the old operation, this procedure was done entirely by hand except for conveying repacked cases from the packing room on the second floor to the shipping area on the first floor. As the new warehouse has been in

operation only five months, it is a little premature to make comparisons with the old system as to the time it takes to handle an order from its receipt to its final shipment. It has been demonstrated, however, that every order received on Monday, when the load is heaviest, can be completely processed from receipt through final shipment that same day.

The shipping dock, 30 ft. wide and 240 ft. long, is at truck bed height and accommodates 20 trucks simultaneously. Extending at a right angle to the platform is a service yard 100 ft. deep for the use of the various truck lines entering, turning and leaving the premises. The largest trucks have ample room to approach and leave freely. This is probably the most striking point of comparison between the old and new procedures. as the previous service yard was a narrow street about 30 ft. wide, used by other trucks and motorists in addition to our carriers' and customers' trucks.

In addition to these operating facilities, the company utilizes a plantwide pneumatic system for transporting papers, invoices, etc. It also makes use of paper conveyors of the flat and Vee type for handling orders in the telephone order department and from the central desk to the head of the order filling line.

The new warehouse is a reinforced concrete structure with 112,500 sq. ft. of floor space on each floor. The roof of the building is constructed of laminated wood trusses which require no cross beams or vertical supports and allow the maximum of light and ventilation.

While there are many other modern ideas incorporated in the new building, it is interesting to note how many of them are directed towards more efficient materials handling and the streamlining of warehousing and distribution phases of the service drug operation. The company is already reaping dividends in operation economies, increased efficiency and "elbow room." Actual operating savings are not yet available but opinion is unanimous in proclaiming the move economically sound and progressive.

PILE UP THE PROFITS WITH

LIFT-O-KRANE

COMBINATION FORK LIFT TRUCK AND MOBILE BOOM CRANE

Stacks 7½ Tons 18 Ft. High

LIFT-O-KRANE, the 2-in-1 machine, not only multiplies floor space, it speeds loading and unloading operations, cuts labor costs, increases profit margins . . . repays its own cost over and over.

For Crane jobs, *simply fold back the forks.* For Lift Truck applications, *quickly and easily demount the boom.* Also available as a Mobile Crane only or as a Fork Truck only. A Ram attachment is available for reels and coils. Rubber tires, gas or Diesel. 4 speeds forward, 4 reverse up to 18 mi. per hr. Operator handles all controls without moving from his seat. 5 ton and 7½ ton sizes.

Write for Bulletin No. 65

As a Mobile Boom Crane with Fork Arms folded back

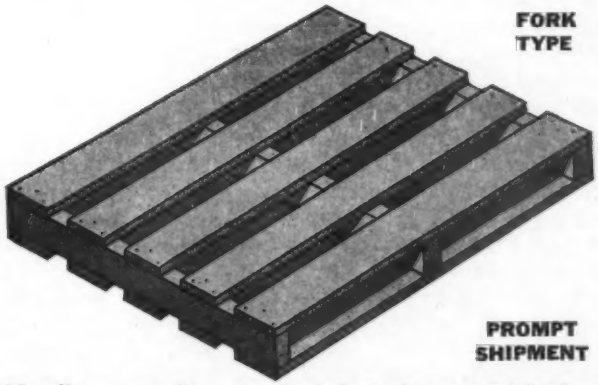
As a Fork Lift Truck with Boom removed

Silent Hoist & Crane Co.

857 63rd ST., BROOKLYN 20, NEW YORK

PALLETS

FORK TYPE • HAND LIFT • STEVEDORE



FORK TYPE

PROMPT SHIPMENT

IPCO pallets are sturdy . . . of sound mixed unseasoned hardwoods constructed with cement coated drive-screws, hand-driven. The Stevedore type pallets are constructed with carriage bolts that have the nuts countersunk. IPCO pallets stand up under the most rigorous service.

Write or telephone for quotations.

IPCO

INDUSTRIAL PALLET CO., Inc.

1615 Woolworth Bldg., New York 7, N. Y.

BArclay 7-8446-7

IHC HANDLING—(*Continued from Page* 63)

templated another type called the "picture frame type."

The 42 x 42 in. pallet size was selected because many IHC materials shipments are by motor truck and this dimension permits pallets to be loaded side by side in standard highway trailers. The standard provides that the pallet itself be made of hardwood lumber; and that the three types of panels used respectively as bases, covers, separators and sides, be made of lighter material.

"The practicability of this d sign," Mr. Carpenter reported, has been proven. Over 425 different piece parts have been successfully handled by this system a' one of our plants alone. Included in this total are forgings, castings, sheet metal parts, sub-assemblies, and complete assemblies ranging in weight from a few ounces t 1,000 lb. . . . It also was agreed that the maximum load handled by a pallet would be 4,000 lb."

A second new standardized item is the "depot pallet" to be used for shipment of service parts. This is a pallet box, 30 by 48 in. equipped with a hinged front panel for the easy removal of contents from stacked pallets. Standardized pallets are expected to prove of considerable advantage to a vendor selling one commodity to a number of IHC works. Heretofore vendors have been required to supply different types of pallets in connection with shipments of identical products to different IHC works.

Another important research committee project is the formulation of standardized tests for various types of lift trucks. Tests are being conducted at three IHC works, with a view to obtaining cross-sectional data relative to costs and operation. Other new standards relate to corrosion preventives and wirebound boxes. Unit loading procedures and specifications also have been standardized, including method of shipping skids and export box panels from vendors to the various IHC Works. Standardized loading methods have resulted in considerable net savings in the export handling of boxed tractors.

The IHC standardization committee has given special attention to the inter-change of information within the company. The committee states that the materials handling field is new and constantly changing and that any laxity in keeping abreast of latest developments can jeopardize potential savings. The committee's materials handling studies have embraced the following: 1. Assembly of a reference list of relevant books and industrial publications. 2. Committee meetings held at different plants. 3. Inviting engineers from different company plants to be present at these meetings. 4. Attendance of key personnel at national conventions. 5. Aid in compilation of the new materials handling manual. 6. Preparation and widespread distribution of minutes and discussion proceedings of committee meetings.

The fundamental concept back of the IHC standardization plan is the coordination of all related activities. Materials handling is not thought of as a separate or isolated activity but as one which must perform in close cooperation with all functional departments.

In discussing the new materials handling standardization plan from the traffic management angle, J. T. Moore, assistant traffic manager, has stated: "Generally speaking, shipments moved or loaded on pallets, practically eliminate claims for loss and damage. For one thing, it's difficult to lose a whole pallet full of parts and, with normal lift truck handling, damage to material is reduced to a minimum. As far as the traffic department is concerned, we would like to see more materials loaded on pallets because it reduces the loss and damage claims, and eliminates a certain amount of paper work at the plants, branches, and at the office, and increases the efficiency of our office for more important work."

John Young, supervisor of safety, in his talk during the April conference, reiterated 21 specific recommendations for improved plant safety in materials handling. These included protective seal fittings for gasoline operated materials handling units, fire extinguishers; treadle guards for rear-platform operated trucks; overhead guards for operators of tilting type of mast; prohibiting of extra riders; authorized trained operators; means of locking out unauthorized drivers; induction training of operators; eye examination for operators; instructions in truck maintenance; inspection of cables and chains; lights when needed; safe type of trailer hitch; checking of floor load limits; aisles and passageway safety; safe dock or loading plates; moving of trucks for repairs or emergencies; methods in spotting materials or power unit.

Books & Catalogs

Packaging Series Nos. 16, 17, 18, 19, 20. THE PEACETIME APPLICATION OF WARTIME PACKAGING DEVELOPMENTS, 43-p., 75c. MODERN SHIPPING AND MATERIALS HANDLING, 39-p., 50c. SHIPPING CONTAINER MATERIALS TESTING, 54-p., 75c. THE PACKAGE AS A SELLING TOOL, 43-p., 75c. PROGRESS TOWARD SAFER PACKING, 23-p., 75c.

This series covers outlook for materials and packaging machinery, air cargo, palletized loads, Rule 41, the G-E puncture tester, compression, conbur, cushion drop, drum, vibration, the top management approach, package design, self-service packaging, point of purchase promotion, packing for export, performance standards for containers, developments in materials handling, etc.

Marketing Series Nos. 62, 63, 64, 65, 66. NEW MARKETING HORIZONS, 22-p., 50c. MODERN MARKET RESEARCH PROCEDURES, 55-p., 75c. ORGANIZATION BEHIND THE SALESMAN, 47-p., 75c. AIDS IN TRAINING AND SELECTING SALESMEN, 40-p., 75c. PRINCIPLES AND PRACTICES IN SALES COMPENSATION, 27-p., 50c.

This series covers purchasing power and income in terms of markets, what's ahead for American business, how to organize for marketing research, an approach to sales forecasting, using the census data, executive planning guides, distribution channels, selecting dealers, doing export business, visual aids for training, how to run a sales conference, etc.

These booklets can be obtained from American Management Assn., 330 W. 42 St., New York City 18.

A DIRECTORY, listing members of the American Chain of Warehouses, Inc. is available from the latter, 250 Park Ave., New York City 17.

A BASIC MARKETING CHART OF THE

(*Continued on Page* 89)

UNIT LOADING

(*Continued from Page 57*)

dock operation and the packing department, which also has been relocated directly to the rear of the office enclosure. Two 7½ h.p. circular saws replaced old fashioned belt driven saws, and resulted in better, more rapid packing. The space formerly occupied by these departments is now used for temporary storage. Its first floor location, close to the shipping and receiving dock, minimizes the constant movement typical of temporary orders.

To illustrate how this revolutionary system of unit load handling operates, we will follow an order of household goods from the receiving dock, to its ultimate storage destination. The usual two or three man trailer crew stacks the pieces to be stored on unit load carriers, which have been placed at the rear of their trailer at the dock. An operator then moves the carrier with the fork truck, to the packing department, where individual pieces that require packing are removed, and completed pieces from previous orders are picked up to continue their "unit" movement. The carrier is then shunted along the transit floor, by fork truck, to an elevator in one of the storage buildings. Many other lifting and moving tasks are performed by the versatile fork truck throughout the plant.

Additional efficiency is gained through a system of placing davenports, upholstered chairs, and rugs, in storage space exclusively reserved for these items. Two full floors are used for upholstered furniture, where it is covered with napthalene flakes and then placed in D.D.T. impregnated covers. The rug room contains specially designed racks that permit the rugs to lie horizontal after they have been sprinkled with napthalene flakes and rolled on poles, in a new space-saving manner.

A highly efficient system of order identification has been developed, whereby each individual item is "piece-numbered," and correspondingly tagged, to facilitate total or partial removal of the order from storage, when desired. All orders are assigned a lot number, that corresponds with a section on the storage floor. These numbers are permanently recorded as the goods are received, which establishes a constant storage inventory.

Neal's storage rooms are all equipped with automatic cross-ventilating fans, that draw fresh air into the building through spun glass filters. This up-to-the-minute ventilating system assures a constant change of air.

The multiple economies gained through such a modernization project can easily be recognized by the storage executive. Completely eliminated are the hours of back-breaking labor, previously performed by the four or five man household goods handling crew. Now the fork truck propels unit loads from the dock through the packing department, as the goods are being inventoried. It is entirely possible for the fork truck to serve five or more unloading trailers at one time.

The time and money saved through the use of unit load handling has confirmed the excellent judgment exercised by the Neal Storage Co., in planning the idea, and then putting it into operation. Last year (1946) was the company's first full year of operation with the new system, and tonnage was increased 59 percent over 1945. A reduction of 18.2 percent was realized in handling expense, alone, in 1946. Additional economies were enjoyed throughout the plant, because of the more rapid pace of their total operation. Use of the unit load method is expected to earn Neal a savings of 25 to 30 percent on handling costs in 1947.

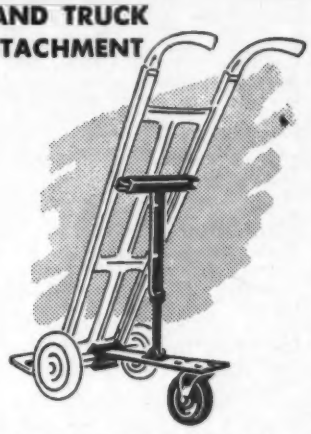
SITUATION WANTED

Man 45 years of age, with over 20 years experience public merchandise warehousing also marine terminal operations. Special qualifications in mechanical handling, palletizing and packing for export and domestic shipping.

Complete knowledge operating, labor, sales, etc. Can furnish excellent references. Location secondary to right connection. Box J 828 c/o DISTRIBUTION AGE, 100 E. 42nd St., New York 17.

FIRST AIDS IN MATERIALS HANDLING

HAND TRUCK ATTACHMENT



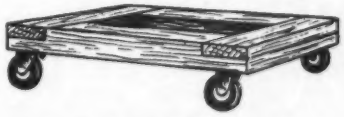
Builds up truck capacity and safety. Operator pushes without holding load. Rolls load on 3 wheels like a platform truck. Adjusts to any angle for proper balance. Free steering. Attaches to any hand truck . . . .

(attachment only) $29.50

AMERICAN DAISY

Most widely used general-purpose truck on the market. Light yet strong. Entire frame stamped from one sheet of heavy gauge high-carbon steel. 48" long, with rubber tired wheels.

$15.25



MOVER'S DOLLY

Ideal for moving crates, boxes, furniture, pianos, etc. Size 16" x 27", 4" x 2" oak frame. 3" rubber all-swivel wheels . . . . . .

$8.95

CLARK INDUSTRIAL EQUIPMENT CORP.
1126 SPRING GARDEN ST., PHILA. 23, PA.

Am interested in
TRUCK ATTACH. ☐ AMERICAN DAISY TRUCK ☐ DOLLY ☐
☐ Enclosed find check or money order.
☐ Please send further information.

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People in Distribution

With the incorporation of the Sanders Transfer & Storage Co., **George Dunlavy** was named president. **Miss Rose Rottero** was elected first vice president; **Mrs. Alice B. Sanders,** second vice president; and **Maj. E. Cox, Jr.,** secretary and treasurer. (Grissam).

The Manning Warehouse Co. has been named exclusive agent for Aero Mayflower Transit Co. **D. H. Gowans, Jr.,** is manager, newly formed household goods division, Manning Warehouse Co. **E. E. Turley** continues as field representative for Manning in the new division. (Haskell).

Fruehauf Trailer Co. has opened a new factory sales and service branch in Jacksonville, Fla. **E. E. Springer** is branch manager.

Norman E. White was appointed assistant general freight agent, Illinois Central Railroad, Chicago, succeeding **Irby L. O'Brien,** who has resigned to become assistant general traffic manager, Monsanto Chemical Co., St. Louis.

C. Harris Crook was appointed general traffic manager, United Aircraft Corp.

Herbert J. Lyall, district sales manager, American Airlines, was elected chairman aviation section—New York Board of Trade.

Karl L. R. Baird has been appointed general traffic manager, New Jersey Zinc Co., and **Walter A. Smith** has been appointed traffic manager.

Frederick M. Connors, Chicago Interstate Commerce Commission Dist., has been named to succeed **H. C. Sanford** as supervisor, Fort Wayne, Ind., ICC Dist., Bureau of Motor Carriers. Mr. Sanford has resigned to become secretary-treasurer and general manager, Clemans Truck Line, Inc., South Bend. (Kline)

Edward S. Reddig, controller, White Motor Co., was elected vice president, while continuing the former office. **Alfred D. Edgerton,** secretary, engineering department, was made assistant secretary of the company.

Tommie Sayles has been elected president, Fort Wayne (Ind.) Transportation Club, with **Roy Wiest,** vice president; **John Cooke,** treasurer; and **Russell Harlan** and **Kenneth Jackson,** members of the board of governors. (Kline)

Walter A. Olen, president, The Four Wheel Drive Auto Co., has been named Wisconsin vice president, National St. Lawrence Assn., replacing the late **Leatham D. Smith.**

R. B. Dorsett, president, All States Freight, Inc., has been elected president, Traffic Study Club of Akron, O., succeeding **L. B. Hines.** Other officers chosen were **Richard Bailey,** traffic manager, General Tire & Rubber Co., first vice president; **W. E. Washer,** Akron, Canton & Youngstown Railroad, second vice president; **J. A. Gee,** B. F. Goodrich Chemical Co., secretary; and **N. F. McNatt,** A. C. & Y., treasurer.

New officers Industrial Traffic Managers Assn. of Baltimore are: **J. L. Canter,** district traffic manager, Koppers Co., Inc., president; **S. M. Whisner,** traffic manager, Hutzler Bros. Co., vice president; **O. J. McCoy,** plant superintendent, Arcrods Corp., secretary-treasurer, all of Baltimore.

J. J. O'Neill was appointed assistant manager, fleet sales section, Ford Motor Co., truck and fleet sales dept. **S. M. Copland** is manager of the fleet sales section.

James Lessard, Seattle, was named state president, Refrigeration Contractors of America. (Haskell)

The Solarine Co., Baltimore, has appointed **Courtland D. Ferguson, Inc.,** Washington, Baltimore, Richmond advertising agency, to handle its advertising account.

Brig. Gen. Hugh C. Minton, who was awarded the Distinguished Service Medal for his "able direction" of the Army Service Forces' Production Div. during World War II, has become production manager, Koppers Co., Inc.

Raymond L. Ward was elected assistant treasurer and assistant controller, Curtiss-Wright Corp.

Gordon J. Berry, vice president and Sales Manager, The Electric Products Co., announced the opening of a new district office in Chicago with **Robert R. Kovach** as Chicago district manager.

Robert A. Olen, general manager, The Four Wheel Drive Auto Co., was elected a member of the board of directors to succeed the late **Charles Hagen.**

Carl Lyttle, New York district sales manager, Dictaphone Corp., was elected president, New York Sales Managers' Club. **Fen K. Doscher,** vice president in charge of sales for Lily-Tulip Cup Corp., was elected vice president. Reelected as secretary was **J. William Johnson,** sales manager, Dennison Mfg. Co., and as treasurer, **G. Lloyd King,** vice president, Lamont, Corliss and Co.

William J. Ritchie was appointed sales manager, western division, Evans Products Co.

A. N. Guy has been appointed assistant sales manager, Fisk Tires division, United States Rubber Co. **J. L. Dunleavey** was appointed manager, Fisk tire and tube dept.

Drake, Startzman, Sheahan, Barclay, Inc., distribution and materials handling consultants, New York City, have announced the opening of an office in Los Angeles, Cal., under the direction of **Neil Drake.**

R. W. Kerr, formerly vice president and treasurer, Plomb Tool Co., L. A., was made executive vice president. **H. C. Baumgartner,** formerly secretary and comptroller, was made secretary and treasurer. Other officerships are: **M. M. Mautner,** vice president in charge of industrial relations; **C. W. Coslow,** vice president in charge of mfg.; **F. G. Robbins,** vice president in charge of research and development, and **J. P. Danielson,** vice president in charge of the J. P. Danielson Div.

J. A. Baldinger has been named assistant to the general manager, Automatic Transp. Co., **T. C. Coleman & Son,** Louisville, Ky., has been appointed sales representatives for the company. Other appointments include a three-man addition to the Lindsley & Voss office, Chicago. **R. N. Van Tuyl** has been appointed service manager, **Edmund J. Odal** has been added to the sales force and **Ken Burke** to the service staff.

Giles C. Hoyt and **Gen. Levin H. Campbell, Jr.,** were elected executive vice presidents of International Harvester Co. **William E. Worth,** formerly executive vice president, has retired. **Robert P. Messenger,** formerly vice president in charge of the Farm Implement Div., has become vice president in charge of foreign operations, succeeding Hoyt. **Ralph C. Archer,** formerly vice president in charge of the Farm Tractor Div., has become vice president in charge of the Farm Implement Div. **Michael J. Graham,** formerly assistant to the vice president in charge of mfg., has been appointed general manager of the Farm Tractor Div. and succeeds Archer as executive head of that div.

Col. Arthur Hall was elected president, Food-O-Mat Corp., New York.

(*Continued on Page* 126)

OIL DRUMS

(*Continued from Page* 82)

Drums were stored in steel racks holding 56 drums per rack. A manually operated portable hoist was used, and four men were required to handle stock to and from storage. With the present system of power fork lift truck, and pallets, it is now possible to store to an overall height of 18 ft., thereby increasing the warehouse storage capacity approximately three times. For example, within the area formerly required by a drum rack holding 56 drums, it is now possible to store 160 drums.

Outside storage of full drums was done manually by double decking them on their sides. Within the area previously required to store four drums, it is now possible to store 20 drums by palletizing. Capacity of storage area is thus increased five times. It is apparent by this comparison that the new methods as a whole have accomplished considerable saving in manpower and space, at the same time contributing largely to a cleaner, more orderly, and more efficient operation.

BOOKS AND CATALOGS

(*Continued from Page* 86)

UNITED STATES, (sixth annual edition), a compilation of workable data designed to facilitate current analysis of business conditions and trends. A. Edwin Fein, G.M., Research Co. of America, 341 Madison Ave., New York City 17.

PALLET CATALOG-HANDBOOK, 8-p. booklet, illustrating various types of pallets and correct applications for efficient palletization. Acme Pallet Co., 13 Park Row, New York 7.

FOR BETTER DISTRIBUTION, 12-p. illus. brochure, shows the progress of the White Motor Co. and that of truck and bus transportation in general. The White Motor Co., 842 E. 79th St., Cleveland 1. (Mr. G. H. Scragg).

JOB-RATER, a magazine for those who own, drive, maintain and direct the operation of trucks. Dodge Div., Chrysler Corp., Detroit 31, Mich.

FROZEN FOOD INDUSTRY SPECIAL BULLETIN, 4-p. illus. pamphlet on materials handling and how it facilities rapid movement of frozen foods in process and in shipment. The Rapids-Standard Co., Inc., Dept. FB-36, 342 Peoples National Bank Bldg., Grand Rapids 2, Mich.

PALLETS *are a proven method of* MATERIALS HANDLING!

Our Gav-Car-Pak collapsible pallet box is proving itself in shipping!

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PALLET SYSTEMS, Inc.
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SAVE Time and Effort — with "Filpaco" Easy Ride
CONVEYORS
Immediate Delivery
- Sturdily constructed of channel steel frames; ball bearing hardened steel wheels; cross braced for rigidity
- Standard 10 ft. straight sections
- 90 degree curves
- Standard conveyors are 12" wide with 6, 8, 10 or 12 wheels per foot
- Permanent and portable adjustable stands
- Special widths and lengths manufactured to your specifications
- Orders filled without delay!
- Write today!

"Filpaco Products" formerly Filco Equipment Division

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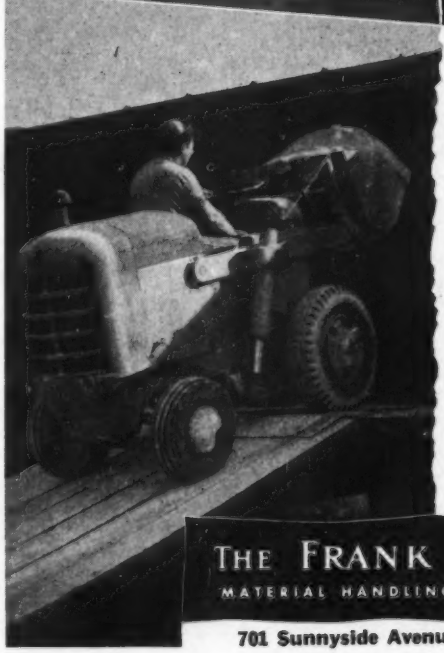
DOUBLED OUTPUT! SAVED 88 MAN HOURS PER CAR!
WITH HOUGH HUFF Payloader PATENTED



At the Terre Company, Rochelle Park, N. J., a speedy little Hough Payloader stepped in and took over the slow, costly job of unloading box cars of phosphoric acid—cut unloading time in half—saved 88 man hours of labor per car — and actually doubled output per hour. An unusual record, but just an every-day performance in thousands of Payloader equipped plants throughout the world. One man operated it works inside of box cars, ships holds, bins; loads, carries, dumps—fertilizer, chemicals, salt, sand, clay, coal, or any bulk material. A Payloader will more than pay its way every day — send for complete details.

More Than 6500 Hough Shovels Now In Use

3 SIZES— HA—10½ cu. ft. / HF—¾ cu. yd. / HL—1 cu. yd.

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MATERIAL HANDLING EQUIPMENT SINCE 1920
701 Sunnyside Avenue, Libertyville, Illinois

Getting down to *Cases*

By LEO T. PARKER
Legal Consultant

WAREHOUSING

Conversion

RECENTLY a higher court allowed the owner of stored goods $1,039.50 for conversion of his goods sold by a warehouseman for $45. For illustration, in Conkle v. George K. Scott Co., Inc., 72 N. E. (2d) 82, Ohio, the testimony showed facts, as follows: The owner named Conkle of household goods arranged with the Lloyd Storage Co. to store his goods. The latter, without knowledge of Conkle delivered the goods to the George K. Scott Co. in whose warehouse it was stored. The Scott Co. had no knowledge of Conkle, and all its statements for storage charges were sent to Lloyd Storage Co. which failed to pay the bills and the Scott Co. sold the goods for $45. Conkle sued both Lloyd Storage Co. and Scott Co. for the true value of his goods. The higher court awarded a verdict in favor of Conkle for $1,039.50.

FINANCE AND INSURANCE

U. S. Laws Prior

ALWAYS, claims and liens of the United States government are superior and prior to claims of the various states. In Ill. v. Collector of Internal Revenue, 67 S. Ct. 340, it was shown that a corporation became bankrupt. The legal question presented the court was: Which claim is prior against the corporation, the United State's claim for taxes under the Social Security Act, or claims of a state for taxes under its Unemployment Compensation Act? The higher court held the United States claims prior, saying: "The priority given the United States cannot be impaired or superseded by state law."

Tax Refunds

According to a recent higher court a taxpayer may recover from the government all income taxes wrongfully collected, although details of the original transaction is not generally known. For example, in Allen, v. Southern Co., 157 Fed. Rep. (2d) 970, the testimony showed facts, as follows: A man named Marion in 1939 purchased a considerable quantity of stock in a corporation. The value of the stock was one million dollars. Although Marion purchased the stock in his own name he had made an agreement with his wife and son whereby the latter were to share in the dividends. The government compelled Marion personally to pay the full income tax on the total amount of the dividends, since 1939, but the higher court held that the government must refund the difference between what he had paid, and the amount Marion his wife and son would have paid jointly.

Surtaxes

See Bates Valve Bag Corp. v. Higgins, 157 Fed. (2d) 866. Here the higher court held that the fact that a corporation was bound, by the terms of an indenture executed by its predecessor in accordance with debentures, not to distribute any income in certain years by cash dividends, this fact did not exempt the corporation from paying surtaxes on undistributed profits under the Revenue Act provision allowing a corporation credit against surtaxes. And in St. Regis Paper Co. v. Higgins, 157 Fed. (2d) 884, it was shown that a corporation received dividends on the stock of its subsidiary. The corporation paid surtaxes in its federal income tax report based on the undistributed profits computed by including such dividends. Later the corporation repaid the dividends to its subsidiary. The higher court held that the corporation was not entitled to recover surtaxes, even assuming that it had held the dividends as a constructive trustee.

MARKETING

Liability

ACCORDING to a recent higher court a contractor who installs a mechanical device is liable, and not the manufacturer, for breach of an efficiency contract. See A. B. Heating Co. 28 So. (2d) 482, where a contractor installed in a building an air conditioning system guaranteed by the manufacturer to maintain a specified temperature. The city water was too warm to enable the system to comply with the manufacturer's guarantee. The higher court held the contractor liable for breach, and not the manufacturer.

Appeals

The courts do not encourage appealing where the amount involved is insignificant. For illustration, in Standard, 25 N. W. (2d) 87, it was shown that a seller breached a sale contract. The lower court allowed the purchaser $75 damages. The latter appealed to the higher court which refused to change the verdict, saying: "To encourage or even permit appeals of this type is no help. Cases like this create bitterness and hostility . . ."

Fixtures

All sellers of machinery, equipment and the like should know that "legal fixtures" can not be removed from a building. Thus, a new purchaser of a building, or one who holds a mortgage on the premises, may prevent a seller from repossessing legal fixtures although sold under chattel mortgages, or conditional contracts of sale. For illustration, in First National Bank, 49 Atl. (d) 760, it was shown that two brothers mortgaged their property to a bank and later purchased an air compressor and motors which were installed in a lean-to adjoining the main building. Cement bases were constructed on which to place the compressor and the motors that operated it in order to lessen vibration. After installation of this new equipment the bank contended that it could not be removed from the building. The bank's contention was that although the equipment was not on the property when its mortgage was signed, yet the equipment is a "legal fixture" which belongs to the real property. This contention was vigorously denied and a law suit resulted, but the higher court held that this equipment belonged to the bank although, as above explained, it was not on the premises when the brothers mortgaged it to the bank. A review of late and leading higher court decisions disclose that the test whether machinery, equipment or other merchandise is a legal fixture involves three elements: (1) The annexation of the article, whether actual or constructive; (2) its adaptation to the use of the realty to which it is annexed, and (3) the intention with which the annexation has been made, whether or not to make it a permanent accession to the freehold. The determination of the question does not rest upon any of these elements alone, but upon a consideration of all of them together. The present day tendency is to regard the manner of annexation taken by itself as of relatively small significance, and to give much weight to the adaptation of the device to the use of the realty. Thus, if one rents or leases real property, or mortgages his own real property, he cannot at any time subsequently remove from the premises any legal fixtures. And neither may a seller repossess the fixture sold on credit to the purchaser.

TRANSPORTATION

ACCORDING to a recent higher court a corporation that transports its own goods in vehicles owned by it is liable for a franchise tax on such transportation facilities. See Texas Co. v. Commonwealth, 198 S. W. (2d) 316.

Consolidations

Although a public service commis-

sion grants a motor carrier the existing certificated rights of another carrier and the privilege of the other carrier to interchange, a merger and consolidation of the two carriers will not be permitted. See Hostetter (Lancaster Transp. Co. Intervener), v. Pennsylvania Public Utility Comn. (Conestoga Transp. Co., Intervener), 49 Atl. (2d) 862, Pennsylvania.

Freight Charges

For three years a motor carrier charged a shipper $1.84 per hundredweight. The carrier instituted suit to recover for undercharges, alleging that the legal rate applicable to the many shipments was $2.17 per hundredweight. The shipper pleaded that the carrier had agreed to route the shipments by the cheapest routes and rates available; that there were available routes over which the merchandise could have moved for a rate of $1.84. Nevertheless the higher court entered judgment for the carrier for the total amount of the several undercharges, with interest thereon. See T. & M. Transp. Co. v. S. W. Shattuck Chemical Co., 158 Fed. (2d) 909.

PACKAGING

Not Interstate

THE government cannot condemn food in intrastate commerce. See U. S. v. Phelps Dodge Mercantile Co., 157 Fed. (2d) 453). The testimony showed facts, as follows: The government filed suit to condemn 175 cartons of food claiming that it contained insect fragments, rodent hairs, and rodent excreta. Since the testimony showed that the food was offered for sale more than two years after it had remained in intrastate storage the higher court refused to condemn the food, saying: ". . . the food was adulterated while held in original packages by appellee at its warehouse . . . Thus it appeared that the adulteration of the food occurred after it ended its interstate journey and came to rest at appellee's warehouse."

Negligence

Employers are not insurers of the safety of employes who negligently fail to use the tools and appliances supplied by the employer. See Mason Corp. v. Graham, 25 So. (2d) 322, Miss., where the testimony showed that an employe was injured in a fall while attempting to jump from a stack instead of using a ladder supplied by his employer. The employe sued to recover damages for the injuries, but the higher court held the employer not liable.

Patents

A patent may be obtained on any new method or device for packaging products. In Freeman, 154 Fed. (2d) 159, the Federal Court allowed a patent on a tubular casing formed of a long strip of paper. The edges of the paper formed a "rib" which can be "jerked" to remove the casing. This casing is used for food products.

Materials Handling Exposition

Almost 85 percent of the exhibit area for the Second National Materials Handling Exposition, to be held in Cleveland Jan. 12-16, 1948, has been leased. The area, which is two-and-a-half times as large as the entire 1947 show, is in the Lakeside Exhibit Hall of the famous Cleveland Auditorium. An extensive campaign to bring the exposition to the attention of top executives in production and distribution, top management, factory and warehouse executives, and transportation men is under way. Many more visitors are expected to attend than attended the first exposition. This year's successful Conference on Materials Handling and the Materials Handling Theater will be repeated, and plans are underway for various institutional presentations of materials handling equipment and methods.

N.F.S.E. Elect Officers

Gene Flack, director of advertising and trade relations counsel, Sunshine Biscuits, Inc., Long Island City, was elected president of the National Federation of Sales Executives, at the 12th annual convention of that body, Los Angeles, June 2-4.

Other officers elected were: 1st vice president: Alfred Schindler, former Under-Secretary of Commerce, U. S. Dept. of Commerce, St. Louis. 2nd vice president: A. H. Motley, president, Parade Publication, Inc., New York. Treasurer: John W. Evans, manager, Kee Lox Mfg. Co., Cincinnati.

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ious countries of the Far East as well as the Near East. Meanwhile, it appears to be the Washington plan to rush the program to improve and expand our preparedness to be ready for any eventuality. It may be the uncertainty of the prospect ahead that has prompted the President to cancel his plan to visit the Pacific Coast and Alaska this Fall, as previously arranged.

One of the most interesting documents issued recently by the War Department is its Research and Development Program for the fiscal year of 1948, covering the period between June 30, 1947, and July 1, 1948. It was given to the public by the general staff. The document stresses the fact that most of the work must be done by civilian industry and civilian laboratories. The impulse is supplied by the seven technical and developing agencies of the war department: ordnance, signal corps, quartermaster corps, corps of engineers, chemical corps, medical department, and the transporation corps. The engineering division of the Air Materiel Command, Army Air Forces, is a separate section, but cooperates with the undertaking. The general staff places emphasis on the suggestion that the most useful and unsuspected contributions are forthcoming when industrialists and other civilians are least burdened with detailed instructions. The war department has some funds which it allocates for research.

The over-all program, of especial interest to those involved in materials handling activities, includes camouflage with lighter weight materials, as well as waterproof, durable, and fire resistance materials. Sheen is to be taken from glass and metal. Special work is being done on gas turbine and steam turbine prime movers for use on specific high speed centrifugal pumps, using more lightweight materials. Also work is being done to determine the feasibility of using track-laying reel trucks to lay collapsible pipelines. It is interesting to learn that helicopters and other aircraft may be used to lay pipelines in otherwise inaccessible areas. The greatly increased fuel needs of new aircraft types have forced revision of airfield fueling systems. Water supply equipment is being built of highly efficient, lightweight material. Another interesting undertaking is the production of lightweight and smaller equipment to move the enormous quantities of materials required for roads and airfields. The emphasis is laid on equipment, methods and materials which will stabilize the natural soils in place. The war department is keenly interested in the many new synthetic materials which may be used as lubricants and as recoil and hydraulic oils. It seeks rust preventive compounds of which there appear to be almost none.

Truck power trains in the 850 h.p. class are in process of development. Current study is devoted to weight classes below 2½ tons. Materials handling equipment is being closely studied to determine how bottlenecks can be corrected. Packaging and protection of shipments are regarded as having problems that include the need for uniformity of size; a series of sizes to fit the optimum of containers, pallets, vehicular bodies, railroad cars, and ship holds. It is proposed to establish unit packaging wherever possible. Materials handling equipment is being devised to meet the problems of local transfer and make routine handling as simple as possible. Truck and transfer body sizes are to be compatible in size with other transportation devices. Pallets and containers are being made to conform with the size of vehicle bodies and handling devices. Most of this work is being done under the direction of the quartermaster general, the commanding general of the army air forces, the chief of engineers, and the chief of the transportation corps.

Marine transport improvements include better engines and auxiliary equipment. Standardization of all items to insure maximum production is part of the program. Particular attention is focussed on general cargo vessels with more speed and power. Other requirements include: 1. more speedy liquid cargo vessels. 2. Offshore

Warehouse Receipts

Warehousemen should carefully study the Uniform Warehouse Receipts Act which, with minor changes, has been accepted by nearly every state, Harry Foster, general manager, Cincinnati Terminal Warehouses, Inc., recently told the Bankers Group of the Cincinnati Assn. of Credit Men. Mr. Foster recommended the brochure "Commercial Bank Management—Warehouse Receipts as Collateral," issued by the Committee on Banking Relations of the American Warehousemen's Assn., as an important source of information on warehouse receipts and stated that the fact that a warehouse receipt was marked "non-negotiable" did not mean that it could not be given to a bank for collateral. "In fact, we warehousemen recommend the use of non-negotiable warehouse receipts issued in the name of the bank," he said. This simplifies the withdrawing of part lots of merchandise from the warehouse, eliminates the necessity of presenting a negotiable receipt for endorsement every time a delivery is made, and reduces the chances of losing the valuable document. When a negotiable receipt is lost, a bond for several times the value of the merchandise must be furnished the warehouse, and in some cases, a court order has been necessary.

The information receipts must contain was outlined by Mr. Foster, and the bankers were advised to see before lending money on warehouse receipts bills of lading, original paid invoices, or to have the merchandise itself checked. Warehousemen, Mr. Foster explained, are enjoined by the Uniform Warehouse Receipts Act from delivering material to bankers who hold negotiable receipts without the presentation of same, and this practice was shown to be a protection for both parties. However, if a non-negotiable receipt is in the name of the bank as storer, the warehouse will release merchandise on letters of release from known authorized bank officers. Mr. Foster also warned bankers to accept receipts from reputable warehousemen only.

and inter-island freight and passenger vessels. 3. Vessels for harbor and coastwise work. 4. Tugs of more towing ability and seaworthiness. 5. Intermediate tugs for harbor and coastwise service.

It is particularly interesting to know that the army is after a smaller harbor tug which can easily be shipped across country or on the decks of larger vessels to other areas. It also seeks river craft of more power and speed, as well as craft especially designed to get through marsh and debris-laden waters. Barges must be both self-propelled and non-propelled, constructed for the most part in easily transportable sections. Floating cranes must have increased weight-lifting capacity and be capable of being transported over great distances. Self-propelled units have been designed. Floating drydocks are being built of 500-ton and 1,500-ton capacity, propelled by low and high pressure gas jet turbines, also by turbo-jet and air screw methods. Horizontal discharge of cargo as applied to the landing craft is sought. In the development of rail transportation, the light-weight Diesel engine, used for marine purposes, is being applied. Consideration is being given to basic designs for a famly of engines with a wide range of horse power, and widest interchangeability of parts. A 50-ton Diesel electric locomotive now is under construction and its design is to be modified to permit substitution of 60-in. and 66-in. gauge trucks. Heavy Diesel-electric locomotives for 56½-in. and wider gauges are under development to furnish the power for heavy mainline service in railroads in foreign areas. Pulverized coal, steam and jet turbines, jet propulsion, and power from some source of atomic energy, are under investigation to provide the needs of rail transportation.

Studies to increase our knowledge of the polar regions are being undertaken. These studies include high-altitude transportation in latitudes where the mean monthly temperatures drop below 14 deg. F. Two thousand specially trained paratroopers, in the frozen wastes of Northern New York, next winter, under combat conditions, will make tests of equipment, dropping heavy pieces by parachute, and they will experiment with new methods of airborne supply and evacuation. Other general investigations embrace a study of materials when subjected to high loading tests. From a purely commercial standpoint, the Department of Commerce urges that those who engage in our expanded export trade should resort to data available in the files of the department. This information will enable those who are not adequately informed, to learn the difference between shipping to India or sending goods to Latin America. It stresses the need of understanding the regulations of some foreign governments relative to specific types of packages, as prescribed by their Customs authorities. Much emphasis is laid on the need of understanding details about waterproofing and wrapping. The department points out that too few exporters seem to realize that cargo shipments often are stored in open sheds completely unprotected

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against the elements for months at a time. This is true of some European ports, of many Asiatic ports, and of most Latin-American ports. The department also urges that shippers bear in mind that since the war, transhipment is now often required at some intermediate ports. The exporter is reminded that the type of freight cars and railroads we have in this country are not available throughout the world, and that railroads which serve ports outside of the United States are invariably less efficient than our railroads. The department significantly remarks: "It is better to spend more money on the package than to pay out money in additional insurance premiums . . . Goods are often delayed and even lost entirely, and only because of poor packing."

The recent decision of the U. S. Supreme Court, upholding the order of the Interstate Commerce Com. increasing class freight rates, (some 20,000 items), has hoisted rates in the northeast territory, and lowered them by a similar amount, 10 percent in the south and the middle west. The principle initiated by the decision is new, because it is based upon the economic condition of the territory served rather than on the earnings of carriers performing services. The territory where the shippers must pay increased rates is that area east of the Mississippi and north of the Ohio and the Potomac, known as the Official Territory. In this region is concentrated roughly half of the country's population and, in dollar volume, nearly three-fourths of the country's business. This means, of course, that the unit cost of operation to the northeastern railroads is lower than in other areas. The ICC originally ruled that class rates in the south and the west could be reduced 10 percent, and so ordered. This meant that all the south below the Ohio and the Potomac, and that part of the west between the Mississippi and the Rocky Mountains, could ship or have shipped within its area, class freight at 10 percent less cost than was exacted from the people in the other area. The far west, beyond the Rockies was not affected. A little later it was decided that this ICC ruling left some "discrimination." To set up what the ICC deemed as parity, it decreed that the class freight rates in the northeastern territory must be *increased* 10 percent. The northeastern railroads had not asked for this increase, and regarded themselves as adequately compensated for their freight services under the pre-existing rates. The effect of the Supreme Court decision, in approving the ICC ruling, obviously, is that the people of the northeastern territory will pay an estimated 50 million dollars more annually in shipping bills to compensate the industrial south and west, for the social objective of giving the people of the south and west an economic advantage. The new principle is regarded definitely as a regulatory policy as distinguished from a statutory policy. Lawyers in government say there does not appear any specific authorization for the ruling in federal statues. The effect is not in itself regarded as extremely momentous upon our economy because it affects only the limited class rates which account for 4 percent by volume and 6 percent by revenue of total freight shipments in the United States. It is believed, however that the "area equalization" theory could be applied as a principle to other forms of service in the national economy, including utilities. It may be applied to gas pipe-line services, and to public ownership utilities such as Bonneville, TVA, and similar enterprises.

BLUEPRINTS—(*Continued from Page 42*)

the specifications of a particular piece of equipment precluded its use in those cases where specific operating limitations existed.

Insofar as it was possible (and here again with due regard for physical or operating limitations) palletizing for unit load handling was recommended. Under such a system merchandise is assembled into unit loads upon arrival at the receiving platform and is handled in such unit loads until it reaches the shipping room where it is broken down to fill customers' orders.

Many warehouses are small and the operators are so few that no great degree of specialization is possible. To meet this condition and to avoid the "empty-handed" movement of men, trucks or elevators, temporary storage spaces on each floor adjacent to the elevator were recommended, so that merchandise to be put in storage could be moved from the first floor to other floors by the order-fillers who otherwise would return empty-handed to take more merchandise out of storage. The use of these temporary storage spaces not only creates more efficient use of manpower in this way but avoids the clogging of aisles and passageways which would further burden normal activities.

Having thus defined the problem, indicated workable solutions to cover all known contingencies were developed and recommendations prepared. These suggested more effective means of using manpower. In addition to preparing a check list of facts concerning warehouses (ceiling height, floor load capacity, size and capacity of elevators, floor conditions, maximum and minimum objects to be handled, and over-all gain or loss of space through using aisles of suitable width and offset this by tiering-up to a greater degree), a flow chart was provided to enable members to analyze their own handling problems. Flow charts have long been used by industrial engineers and enable the user clearly to visualize what improvements are possible in the way of continuing or eliminating operations.

Savings also are possible in office procedure and for this reason a study of this phase of wholesaling is in the making. Present indications are that with further studies already contemplated and the need for individual consultation with the engineer, for which a nominal charge is made, this phase of association activity will much more than pay for itself in benefits to the membership.

HOW MUCH FOR TRANSPORTATION?

(*Continued from Page* 66)

at the start of this article, there is a justified expectation for increased service. In other words, the more you pay for an article, the higher the quality you naturally expect. That is true under normal conditions. But it has not been true for the last year or so, whether you buy shirts, food, real estate or transportation. Rail express transportation has not, as yet, been able to give shippers the same standard of service it delivered in prewar days. The reasons are physical and the lag in delivering such service to the public can be attributed to: 1. Delays in receiving delivery of new trucks, parts or worn equipment, new railroad rolling stock and other facilities. 2. A great postwar increase in demand for express service due to rapid production of many scarce items and a lack of equipment in competing transportation to take up part of the load.

Reason 2 seems to suggest that we recommend use of competitors. Actually with service to the public as a primary consideration, we believe that it would have been a good thing for transportation as a whole if new equipment had been forthcoming more readily in the last eighteen months to transportation organizations of every description.

The Railway Express Agency this year will place into operation 500 new-type refrigerator cars which are equipped to travel on the fastest trains. We call them "One-Hundred-Mile-An-Hour Reefers." To build them, the American Car and Foundry Co. placed the largest single order for railroad car roller bearings ever awarded. These cars are "reefers" but all are adaptable to any and all kinds of express traffic. They can be warmed in the winter, cooled in the summer, carry wet material or dry material. This is but one contribution to the pool of new railway equipment needed so desperately to meet the great shipping demands of today.

Operations in express terminals and in other places are becoming more streamlined through the installation of additional mechanical equipment for transfer and general handling of express. Loud speaker systems in terminals supply a central control and speedy operation in terminals large and small. A constant training program is carried out which stresses proper sorting, stacking, safe handling and the many other processes required for an efficient express operation.

The railroads have embarked on a tremendous program to provide more and faster service for the nation. Additional cars, faster and larger engines, re-designing and re-building of trackage and road beds to withstand higher and higher speeds.

America realizes today that it is not sufficient unto itself. The rest of the world is waiting with real anxiety for millions of tons of food, equipment, machinery and other products necessary to the maintenance of civilization. These mountains of material must be carried from our production and farming centers to ports of embarkation at highest speed and transferred there to the ships that will deliver the traffic to ports all over the world.

This is indeed an important period in the history of the American transportation industry. This is a day when the distribution of goods in all of its steps should be thoroughly reviewed and studied. From this need I am sure there will be produced new ideas, new methods and the development of a system of distribution far more effective than any we have seen in the past.

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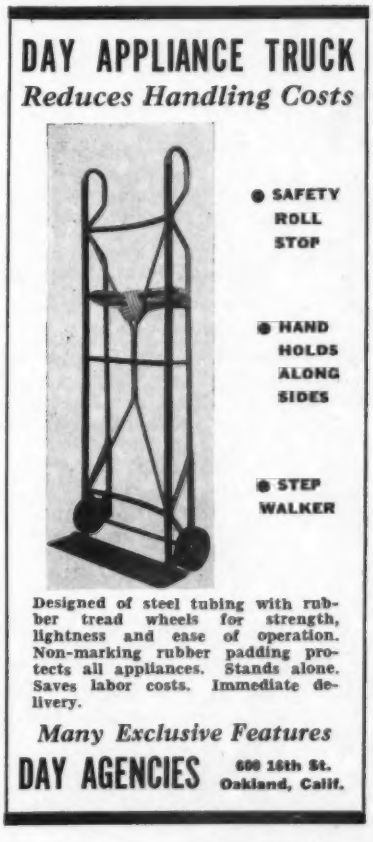
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Comparative Collateral Value Of Pledge Instruments

The comparative value of warehouse receipts, trust receipts and chattal mortgages in securing loans against commodities or inventory goods is a topic of interest and importance to users of such pledge instruments. In following compilation no attempt is made to present the subject from the viewpoint of the legal precisionist but rather to contrast, on the basis of information available generally to the layman, the relative importance in specific circumstances of each medium.

By JOHN J. McMACKIN
Vice President
Tidewater Field Warehouses, Inc.,
New York, N. Y.

	Warehouse Receipts	Trust Receipts	Chattel Mortgages
Legality and Uniformity	The Uniform Warehouse Receipts Act, adopted in all states, standardizes such instruments and avoids conflicting legal opinions. Has been tested in the highest courts.	Instruments not standardized, as few states have adopted the Uniform Trust Receipts Act. Susceptible to varying legal interpretations.	There is no uniform chattel Mortgage Law. State laws differ substantially in different jurisdictions. Chattel mortgages can be sustained in those states having chattel statutes.
Title	The title which a depositor possesses passes with a warehouse receipt. Possession of receipt is prima facie evidence of such title to goods.	Title must be derived from party other than the debtor himself. The borrower cannot pass legal title to goods by assigning trust receipt direct to lender.	Chattel mortgage does not represent title. It is a mere lien on the goods. Records must be checked to ascertain if chattel is an actual first lien.
Recording	No acknowledgment or recording is necessary with a warehouse receipt.	Some states provide that no public record need be made if receipts are used no longer than 30 days; but if used more than 30 days then, a statement must be filed with secretary of state. If receipt is filed for record, then it takes on the limited aspect of a chattel mortgage.	Must be acknowledged and recorded; otherwise may lose its validity, through recording of other instrument. recording of other instrument.
Transfer	Negotiable receipt: Transfer or delivery of receipt is sufficient to transfer title. The original holder endorses the receipt, but subsequent transfers need no endorsements. Non-negotiable receipt: Can be transferred by assignment only. New receipts will be issued upon request of present holder.	Title cannot be transferred.	Transfer of title must be made by a complete removal of first instrument from the records, and by the making of an entirely new lien.
Possession and Control	Give absolute, independent custodianship of goods to bonded third party trustee—the public warehouseman.	Goods remain in possession of the borrower, who may not have the right to misuse the goods, but certainly has the power to do so.	Possession remains in the borrower, who has the same power to misuse goods as the borrower under trust receipts.
Negotiability	Negotiable receipts are negotiable on their face. Non-negotiable receipts may be assigned on face or new receipts will be issued in lieu thereof by warehouse company.	Lack all the characteristics of negotiability.	Chattel mortgages lack the quality of being negotiable.
Repossession	May be foreclosed as a pledge. Repossession can be taken at any time loan is in default or lender's security is in jeopardy. Legal action not necessary.	Instruments susceptible to varying interpretations. If title has come through third party, and there has been no intermingling of other goods from an entirely new creditor, liens may usually be foreclosed or goods repossessed without legal action. Suggest study of local laws.	As title to goods is merely in the form of a lien, legal action must be taken to foreclose or repossess. Lawyer, sheriff, notice and sale are required.

	Warehouse Receipts	Trust Receipts	Chattel Mortgages
Liability of Issuer	Easily ascertained through checking financial standing of warehouseman, together with his complete coverage of legal liability policies and fidelity bonds. Available to any lender. Warehouseman has no interest in merchandise except to guard it for the true owner.	The liability of giver is a confused and anomalous one, from a legal standpoint. The so-called "trustee" is not a trustee in that he does not hold legal title to goods. There are usually no liability policies or bonds covering trust receipt operations.	Liability of signer of chattel mortgage is much the same as that of giver of trust receipt. Goods are in complete control of borrower himself, who has an intimate interest in their disposition. Usually no bonds or liability policies cover such chattels, therefore, the sole liability is in the maker of such instruments.
Rediscountability	May be rediscounted, or used as basis for banker's acceptances. Federal Reserve has recognized the merits of warehouse receipts on acceptance paper.	Trust receipts are not accorded consideration in Federal Reserve regulations.	Not eligible for rediscount unless supported by financial statement and proof that funds will be used for agricultural or commercial purposes.
Flexibility	Goods may move freely when placed on warehouse receipts. A simple withdrawal order signed by the lender is sufficient to release. Special release instructions may be given the warehouseman, which further facilitates movement. Negotiable receipts must be presented for endorsement.	Goods usually are permitted to move rather freely, with some restrictions as to sale or conversion. Control may be established—after a fashion—by a fully worded, properly drawn agreement between the parties.	Flexibility as to use may be had, but in case of sale or transfer, there is no provision for partial release or sale. Entire instrument must be withdrawn and recorded.
Release of Goods	Release of any or all of goods may be made at any time through the simple expedient of warehouse withdrawal order or a written release order, signed by holder of receipt. Negotiable receipts must be presented for endorsement or cancellation. Not recorded.	Goods may be released only as per the individual agreement drawn into the trust receipt. If the instrument is filed of record, there is usually no method of effecting a partial release.	Once a chattel mortgage has been placed of record, there is no way of making partial releases without releasing the whole, except by remaking the instrument for the balance left, and by reacknowledgment and recording.
3rd Party Claims	Ownership of warehouse receipts is prima-facie evidence of the title to goods shown thereon, therefore, is protection against third-party claims, unless a prior lien on goods has been covered up through fraud. In such case depositor of goods is liable under the criminal statutes. In bankruptcy cases, the general creditors would be eliminated from participation in goods or proceeds.	Offer no protection against third-party claims arising out of "a co-partnership in the goods" or the finished product resulting therefrom. Court decisions are almost unanimous in declaring the trust receipt invalid where the borrower is the original owner of the goods. Protection is afforded not against the borrower's dishonesty, but against his honest insolvency. In bankruptcy proceedings goods come into possession of the court.	There is ample evidence that a recorded chattel mortgage lends protection as against third-party claims originating after date of mortgage, but, there is decided confusion as to the legal aspects where goods placed under chattel mort- are mingled with or become a component part of a manufactured or produced whole. In bankruptcy goods automati ically come into possession of the bankruptcy court.
Misappropriation	Holder of warehouse receipt is protected, first by disinterested third-party trusteeship; second by a series of heavy bonds and liability policies.	Borrower has no legal right to misappropriate goods, but always has the power to do so because the goods are in his own possession, and he has a definite interest in their disposal. No guaranteed protection to holder of trust receipt.	The same is true of a chattel mortgage as is true of a trust receipt. No real or bonded trusteeship is provided.
Substitution or Shortage	The Uniform Warehouse Receipts Act does not permit any substitutions of collateral. There is no reason for a warehouseman to permit substitution of collateral nor to allow any shortages to occur. Contrariwise, the warehouseman would thereby open up avenues of liability for himself from which he cannot escape, due to the fact that his operations are completely bonded against such practices.	The maker of a trust receipt certainly has it within his power to not only make substitutions of collateral, but by reason of his custodianship he can develop shortages. In all matters of accounting for goods the lender must accept the word of the borrower, who must confess his own wrongdoing should irregularities occur.	The same lack of responsibility attaches to a chattel mortgage as to a trust receipt. In cases of substitution or shortages, the lender's remedy is with the courts.
Security	A warehouse receipt is a document of title, delivered by a disinterested third party trustee, with strong financial backing behind his receipt and further guaranteed by heavy legal liability policies and fidelity bonds.	The party executing trust receipt is generally the borrower. He holds the goods in trust on behalf of the lender—usually a bank—and agrees to deliver the proceeds of the sale of the goods to the lender. There is no third-party trusteeship, and no bond or liability coverage.	Security is evidenced only by the goods themselves which are entrusted to the maker of the chattel, as in the case of trust receipts. No third-party trustee, adequately bonded, is provided.

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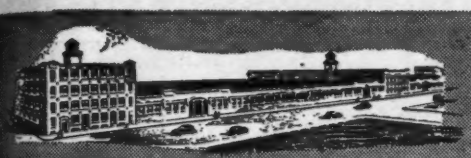

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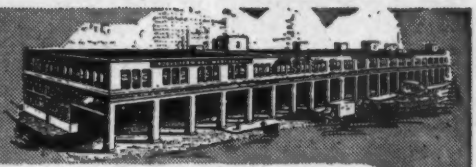

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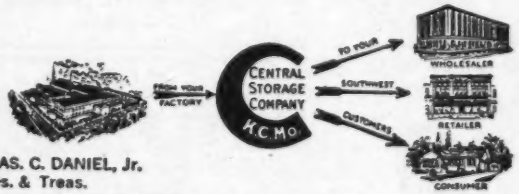

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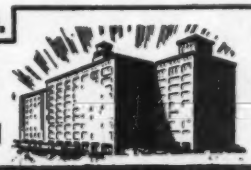

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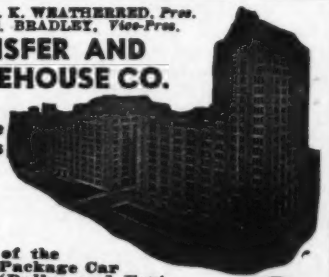

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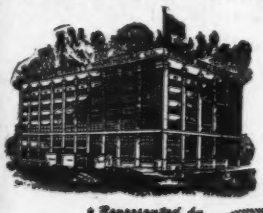

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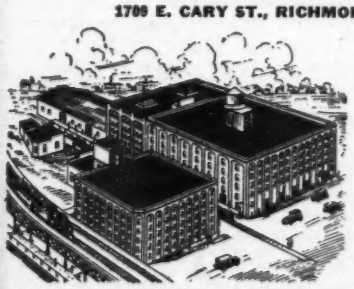

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PEOPLE

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C. William Drake, formerly manager, Sales-Service Branch, Sales Div., Lehigh Warehouse & Transportation Co. has been promoted to assistant manager of the Elizabeth (N. J.) division of the company. **Andrew H. Zundel,** formerly sales manager, has been promoted to the post formerly held by Mr. Drake.

John A. Worthington was appointed general sales manager, Piston Ring Div., Koppers Co., and **T. Latimer Ford** will head a new company department devoted to replacement sales.

OBITUARY

Binford Hester, 71, Memphis, Tenn., president, Federal Compress & Warehouse Co. (Grissam)

Merle Fullerton, 50, Youngstown, O., manager, Youngstown information office, Office of Defense Transportation. He was owner and operator, Fullerton Transfer & Storage Co., and was vice president, Ohio Highway Users Trucking Assn., past president, North American Original Van Lines Assn., past president, Household Carriers Bureau of Washington, director, American Trucking Assn., and past president, Ohio Assn. (Kline)

Emmet Sheahan, 58, Detroit, assistant to the president, United States Rubber Co.

J. M. Breen, general freight agent, New York Central System, past president Traffic Club of New York.

Paul S. Steward, president and treasurer Arrow Transfer & Storage Co., Chattanooga, Tenn.

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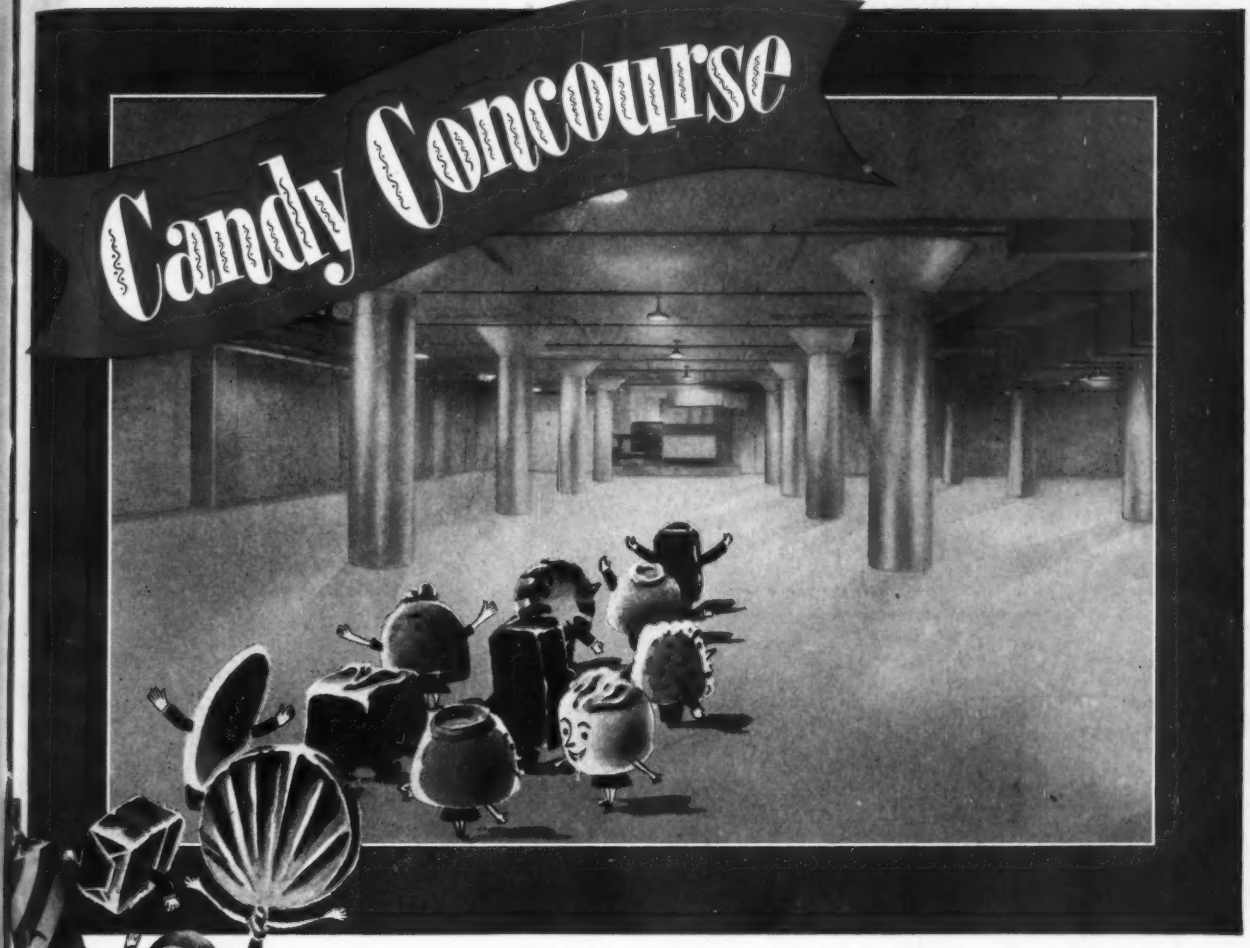

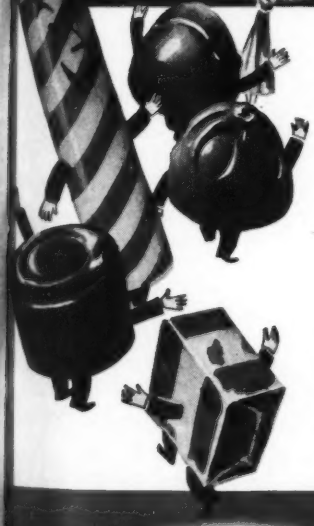

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